

Superfund Records Center  
SITE: SUTTON BROOK  
BREAK: 11.09  
OTHER: 18772

13

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MATERIAL SAFETY DATA SHEET

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REM Chemicals, Inc.  
325 West Queen Street  
Southington, CT 06489

Phone (203) 621-6755  
Fax (203) 621-8822

NFPA HAZARD RATINGS

HEALTH Blue ----- 3

FLAMMABILITY Red ----- 0

REACTIVITY Yellow ----- 1

SPECIAL HAZARD White ----- W

SECTION 1 - General Information

PRODUCT TRADE NAME REM® E-49

CHEMICAL FAMILY & SYNONYMS

CHEMICAL FAMILY Alkali Mixture

CAS NO. N/A

DOT SHIPPING NAME Sodium Hydroxide Bead Mixture, Corrosive  
Material, Un 1823

DOT HAZARD CLASS Corrosive Material

SECTION 2 - Hazardous Ingredients

<u>Chemical Identity</u>	<u>CAS No.</u>	<u>%</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>
Sodium Hydroxide	1310-73-2	10-50	2 mg/m <sup>3</sup>	

TRW-00930

0908-2298

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**SECTION 3 - Physical Data**

Boiling Point (°F)	: N/A
Specific Gravity (H <sup>2</sup> O = 1)	: 1.6
Vapor Pressure (mgHg)	: N/A
Percent Volatile by Vol %	: N/A
Vapor Density (Air = 1)	: N/A
Evaporation Rate	: N/A
Solubility in Water	: Complete
pH	: 13.5
Appearance and Odor	: White to slightly colored

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**SECTION 4 - Fire and Explosion Data**

Flash Point	: Not Flammable
Flash Point Test Method	: Not Flammable
Flammable Limits % by Vol LEL	: Not Flammable
Flammable Limits % by Vol UEL	: Not Flammable
Extinguishing Media	: Not Pertinent
Special Fire Fighting Procedures:	Wear NOISH/MSHA approved respirators.
Unusual Fire Fighting Procedures:	May erupt on contact with water.

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**SECTION 5 - Health Hazard Data**

**Threshold Limit Value** : Not listed

**OSHA and ACGIH** : 2 mg/m<sup>3</sup>

**Carcinogen** : Not listed

**Symptoms of Exposure**

**EYES** : Will irritate and burn.  
Can be destructive to tissue.

**SKIN** : Will cause severe damage.

**INGESTION** : Will cause severe damage to  
mucous membranes, severe scar  
formation or perforation may  
occur.

**INHALATION** : Dust may cause damage to  
upper respiratory tract, and  
lung itself, producing a mild  
nose irritation to pneumonitis.

**Emergency First Aid - Eyes** : Immediately flush eyes with  
plenty of water for at least fifteen (15) minutes. Hold eyes open  
during flushing with water. Seek medical attention.

**Emergency First Aid - Skin** : Wash thoroughly under safety  
shower and remove contaminated clothing. Continue until all slick  
feeling gone. Seek medical attention.

**Emergency First Aid - Ingestion:** If conscious, drink large amounts  
of water or acidic beverages (orange juice, soft drinks  
carbonated). Do NOT induce vomiting. Seek medical attention.

TRW-00932

0908-2300



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**SECTION 6 - Reactivity Data**

**Stability** : Stable

**Incompatibility** : Strong acids. Strong oxidizers.

**Materials to Avoid** : Organic materials. Strong acids.

**Hazardous Polymerization** : Will not occur.

**Hazardous Decomposition Products**: None

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**SECTION 7 - Spill or Leak Procedures**

**Action to Take for Spills** : Dilute with large volume of water. Neutralize with mild acid.

**Waste Disposal Method** : Dispose of in accordance with Local, State or Federal regulations.

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**SECTION 8 - Special Protection Information**

**Eye Protection** : Safety goggles, face shield.

**Skin Protection** : Rubber boots with safety toes, rubber gloves and safety clothing.

**Respiratory Protection** : Use NOISH/MSHA approved respirators.

**Ventilation Recommended** : Local exhaust to maintain dust level below permissible limits.

**Other Protection** : Not Pertinent.

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**SECTION 9 - Special Precautions**

**Precautions in Handling and Storage:** Store in dry place indoors. Never touch eyes or face with hands or gloves that may be contaminated. Wash thoroughly after handling. When making solutions add material slowly to surface of cold water while stirring to avoid violent splattering. DO NOT ADD TO HOT WATER, CHEMICAL MAY ERUPT.

**Prepared By:** Robert Zobbi  
**Date** : June 1, 1991

**Title:** Technical Director

TRW-00934

0908-2302

For Information  
2/25/92

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MATERIAL SAFETY DATA SHEET

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REM Chemicals, Inc.  
325 West Queen Street  
Southington, CT 06489

Phone (203) 621-6755

NFPA HAZARD RATINGS

HEALTH Blue ----- 3

FLAMMABILITY Red ----- 0

REACTIVITY Yellow ----- 1

SPECIAL HAZARD White ----- W

SECTION 1 - General Information

PRODUCT TRADE NAME REM® E-1690

CHEMICAL FAMILY & SYNONYMS

CHEMICAL FAMILY Alkali Mixture

CAS NO. N/A

DOT SHIPPING NAME Corrosive Solid Sodium Hydroxide Mixture  
UN1823

DOT HAZARD CLASS Corrosive

SECTION 2 - Hazardous Ingredients

<u>Chemical Identity</u>	<u>CAS No.</u>	<u>%</u>	<u>ACGIH TLV</u>	<u>OSHA PFL</u>
Sodium Hydroxide	1310-73-2	10-50	2 mg/m <sup>3</sup>	

TRW-00935

0908-2303

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**SECTION 3 - Physical Data**

Boiling Point (°F)	: N/A
Specific Gravity (H <sup>2</sup> O = 1)	: 1.6
Vapor Pressure (mgHg)	: N/A
Percent Volatile by Vol %	: N/A
Vapor Density (Air = 1)	: N/A
Evaporation Rate	: N/A
Solubility in Water	: Complete
pH	: 13.5
Appearance and Odor	: White to slightly colored

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**SECTION 4 - Fire and Explosion Data**

Flash Point	: Not Flammable
Flash Point Test Method	: Not Flammable
Flammable Limits % by Vol LEL	: Not Flammable
Flammable Limits % by Vol UEL	: Not Flammable
Extinguishing Media	: Not Pertinent
Special Fire Fighting Procedures:	Wear NOISH/MSHA approved respirators.
Unusual Fire Fighting Procedures:	May erupt on contact with water.

---

**SECTION 5 - Health Hazard Data**

**Threshold Limit Value** : Not listed

**OSHA and ACGIH** : 2 mg/m<sup>3</sup>

**Carcinogen** : Not listed

**Symptoms of Exposure**

**EYES** : Will irritate and burn.  
Can be destructive to tissue.

**SKIN** : Will cause severe damage.

**INGESTION** : Will cause severe damage to  
mucous membranes, severe scar  
formation or perforation may  
occur.

**INHALATION** : Dust may cause damage to  
upper respiratory tract, and  
lung itself, producing a mild  
nose irritation to pneumonitis.

**Emergency First Aid - Eyes** : Immediately flush eyes with  
plenty of water for at least fifteen (15) minutes. Hold eyes open  
during flushing with water. Seek medical attention.

**Emergency First Aid - Skin** : Wash thoroughly under safety  
shower and remove contaminated clothing. Continue until all slick  
feeling gone. Seek medical attention.

**Emergency First Aid - Ingestion:** If conscious, drink large amounts  
of water or acidic beverages (orange juice, soft drinks  
carbonated). Do NOT induce vomiting. Seek medical attention.

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**SECTION 6 - Reactivity Data**

**Stability** : Stable

**Incompatibility** : Strong acids. Strong oxidizers.

**Materials to Avoid** : Organic materials. Strong acids.

**Hazardous Polymerization** : Will not occur.

**Hazardous Decomposition Products:** None

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**Respiratory Protection** : Use NOISH/MSHA approved respirators.

**Ventilation Recommended** : Local exhaust to maintain dust level below permissible limits.

**Other Protection**

**: Not Pertinent.**

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**SECTION 9 - Special Precautions**

**Precautions in Handling and Storage:** Store in dry place indoors. Never touch eyes or face with hands or gloves that may be contaminated. Wash thoroughly after handling. When making solutions add material slowly to surface of cold water while stirring to avoid violent splattering. DO NOT ADD TO HOT WATER, CHEMICAL MAY ERUPT.

**Prepared By:** Robert Zobbi

**Title:** Technical Director

0908-2307

**TRW-00939**

**Date** : July, 1, 1990

**TRW-00940**

0908-2308



TRW FASTENERS PURCHASING AND RECEIVING RECORD

PO # 83032-06-002

VENDOR

REM CHEMICAL  
325 WEST QUEENE STREET  
SOUTHINGTON, CT. 06489

SHIP TO

TRW FASTENERS DIVISION  
195 BINNEY STREET  
CAMBRIDGE, MA. 02142-1051

DESCRIPTION E-1690 ELECTROCLEANER

PURCH UOM LB

QUANTITY ORDERED 1,000

PO PRICE \$ .770

FOB FOB CARRIER VATS

DOCK DATE 09/19/90

TAXABLE NONTAXABLE X

RECEIVING

RECEIVER DATE 09/19/90

QUANTITY RECEIVED 1,000

ACCOUNTS PAYABLE

VENDOR # 091245

PO # 83032-06-002

CGRP/ACCT 00 701 701 710 303

PT/ET/DESC 1 E80011 .EA. 1000

QUALITY CONTROL

CERTIFICATION RECEIVED

HARDNESS

THICKNESS

WIDTH

TRW-00941

0908-2309

MSDS IDENTIFICATION NUMBER	DATE ISSUED	ISSUED BY	EMERGENCY PHONE NUMBER
EA-007	March 1, 1989	Environmental Engineering Department	Ulbrich 203-239-4481 Chemtrec 800-424-9300
TRADE NAME: High performance, heat resistant alloys		FORMULA: Alloy composed of varying concentrations of elements listed in Section II.	
I. PRODUCT IDENTIFICATION CHEMICAL NAME: See Section II for Alloy Designations		CHEMICAL FAMILY: Alloy	

## II. HAZARDOUS CONSTITUENTS

### ELECTRONIC ALLOYS GROUP VII

Ulbraseal 36; 42; 46; 48; 52; Ulbravar 29-17;  
Sealmet HC-4.

#### DANGER

INHALATION OF DUST OR FUME MAY CAUSE  
SERIOUS LUNG INJURY. SKIN, EYE AND  
MUCOUS IRRITATION MAY OCCUR.

The electronic alloy products identified above may contain, in varying concentrations, the following elemental constituents: chromium, cobalt, copper, iron, manganese, nickel and silicon. For specific concentrations of these and other elements present, refer to the Material Safety Data Sheet (MSDS) for this product.

Inhalation of metal dust or fume generated by the use of these alloys may cause adverse health effects such as reduced lung function, nasal and mucous membrane irritation. Exposure to dust or fume generated by the use of these alloys may also cause eye irritation, skin rash and effects on other organ systems.

Chrome, nickel and some of their compounds are listed in the 3rd Annual Report on Carcinogens as prepared by the National Toxicology Program (NTP) as well as the International Agency for Research on Cancer (IARC) Monograph Series. The following information is a summary of findings reported to date:

#### NOTICE: SECTION 313

Some of the previously listed chemicals are subject to annual reporting of releases into the environment under Section 313 of the Emergency Planning and Community Right-To-Know-Act of 1986. It is the responsibility of the user to verify whether or not his or her facility is in compliance with all Federal and State Environmental regulations.

#### NOTICE: CALIFORNIA LIST

Our Material Safety Data Sheets (MSDS) have been reviewed for inclusion of any chemicals listed under the Safe Drinking Water and Toxic Enforcement Act of 1986 (California Proposition 65). We at this time do not report any of the "listed" chemicals as constituent components in any alloys currently processed by our company.

Element or Certain  
Compounds Evaluated  
or Both

(Identified by  
Element Shown)

Determination/Evaluation  
Evidence of  
carcinogenicity  
to humans:  
Evidence of  
carcinogenicity  
to animals:

CHROME  
Sufficient  
Sufficient  
Sufficient

Limited

• Avoid breathing dust or fume. If the use of this material produces dust or fume, use appropriate ventilation controls, personal protective equipment or both. For additional information refer to the Material Safety Data Sheet (MSDS) for this product.

**Ulbrich Stainless Steels & Special Metals, Inc.**  
**Material Safety Data Sheets**  
 Electronic Alloys Group VII

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ALLOY NOMINAL	UNS No.	CONSTITUENT(S) C	% Maximum unless otherwise shown. Si	Cr	Ni	Co	Cu	Fe	Al	Mo	Ti	Mg	Zr	Other	DENSITY lbs/cu in	(approx.) MELTING PT. degree (F)
ULBRASEAL 36	K93601	.03	.20	.10	.36.0	.05	.15	BAL	.01						.291	2600
ULBRASEAL 42	K94100	.05	.30	.25	.41.0			BAL	.10						.293	2600
ULBRASEAL 46	N/L	.05	.30	.25	.46.0			BAL	.10						.294	2600
ULBRASEAL 48	K94800	.05	.30	.25	.48.0			BAL	.10						.295	2600
ULBRASEAL 52	K95050	.05	.30	.25	.50.5			BAL	.10						.300	2600
ULBRAVAR 29-17	K94610	.04	.20	.20	.29.0	.17.0	.20	53.0	.10	0.20	0.10	0.10	0.10		.302	2640
SEALMETHC-4	N/L	.50	.25	5.75	42.5			BAL							.293	2600
CAS Number		7440-44-0	7439-96-5	7740-21-3	7740-47-3	7740-02-0	7440-48-4	7440-50-8	7439-89-6	7429-90-5	7439-98-7	7440-32-6	1309-48-4	7440-67-7		
Contaminant & Exposure Limits		Not Listed	As Dust As Fume	As Soluble Salts As Insoluble Salts	As Metal Ni As Soluble Ni	As Dust As Fume	As Dust As Fume	As FeO Fume As Fe	As Dust As Fume	As Soluble Mo As Insoluble Mo	As TiO <sub>2</sub>	As Fume MgO	As Dust As Fume			
(mg/m <sup>3</sup> ) PEL TLV		5(c) 5(c) 5(c) 1	15 10 1 1	0.5 0.5(VI) 1 0.5	1 1 1 1	0.1 0.1 0.1 0.2	1 1 0.1 0.2	10 5 5	10 5 5	5 5 15 10	15 10 15 10	15 10 15 10	5 5 5 5	5 5 5 5		

TRW-00943

0908-2311

U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health AdministrationForm Approved  
OMB No. 44-R1387

## MATERIAL SAFETY DATA SHEET

APPROVED

FEB 18 1987

ENVIRONMENTAL  
ENGINEERING

## SECTION I

MANUFACTURER'S NAME BRAND-NU LABORATORIES	EMERGENCY TELEPHONE NO. (203) 235-7989
ADDRESS (Number, Street, City, State, and ZIP Code) 30 maynard St. Meriden, CT. 06450	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS EDTA STANDARD SOLUTION
CHEMICAL FAMILY	FORMULA

## SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	AS WATER	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	1.005
VAPOR PRESSURE (mm Hg.)	AS WATER	PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)	AS WATER	EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	COMPLETE		
APPEARANCE AND ODOR			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LeI	UeI
EXTINGUISHING MEDIA	NON		
SPECIAL FIRE FIGHTING PROCEDURES	FLAMMABLE		
UNUSUAL FIRE AND EXPLOSION HAZARDS			

TRW-00944

SECTION V - HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE	NONE ESTABLISHED FOR THIS PRODUCT
EFFECTS OF OVEREXPOSURE	LOW HAZARD
EMERGENCY AND FIRST AID PROCEDURES	NONE INDICATED

SECTION VI - REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid)			
HAZARDOUS DECOMPOSITION PRODUCTS			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
FLUSH DOWN DRAIN	

SECTION VIII - SPECIAL PROTECTION INFORMATION			
RESPIRATORY PROTECTION (Specify type)			
VENTILATION	LOCAL EXHAUST	NONE	SPECIAL
	MECHANICAL (General)	NONE	OTHER
		NONE	
PROTECTIVE GLOVES		NO	EYE PROTECTION
OTHER PROTECTIVE EQUIPMENT			

SECTION IX - SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	
KEEP IN TIGHTLY CLOSED CONTAINER	
OTHER PRECAUTIONS	



**McGean-Rohco, Inc.**

1250 Terminal Tower, Cleveland, Ohio 44113 216/621-6425

#12110

# MATERIAL SAFETY DATA SHEET

Product Name: EM-1 ETCHANT		Emergency Phone No.: 216/441/4900
Plant Address: 2910 Harvard Avenue Cleveland, OH 44109		Chemtrec Phone No. 800/424-9300
Prepared By: TSCA Coordinator	Issue Date: 8/80	Revised Date: 3rd 10/87

## INGREDIENTS AND HAZARDOUS COMPONENTS

Material	%	TLV	C.A.S. #	Subst. Carriage
Chromium Trioxide	>90	0.1	1333-82-0	Yes
		mg/m <sup>3</sup>		

## PHYSICAL DATA

Boiling Point: NA	Freezing Point: NA	Specific Gravity: Approximately 2.7	pH: NA
Vapor Pressure at 20° C: NA	Vapor Density (Air = 1): NA	% Volatiles by Volume: NA	Odor: None
Evaporation Rate (Butyl Acetate = 1) NA		Solubility in Water: Appreciable	
Appearance and Form: Dark red flakes or powder.			

## FIRE AND EXPLOSION HAZARD DATA

Flash Point: NA	Flammable Limits in Air:
Test Method: NA	% By Volume Upper: NA Lower: -
Extinguishing Media: NA	TRW-00946
Special Fire Fighting Procedures: Self-contained breathing apparatus should be worn in areas where chromic acid is stored.	
Unusual Fire and Explosion Hazards: Powerful oxidizing agent. May react with oxidizable substances rapidly enough to ignite them.	
DOT Classification: Oxidizer, Corrosive NA-1463	Note: UK = Unknown NA = Not Applicable

08.08.92 U.I. 19PM \*M-R W HAVEN

0908-2314

## HEALTH HAZARD DATA

Effects of Overexposure and Primary Entries to Body: Primary entry through skin and inhalation of dust. Ulceration of mucous membranes of nose and mouth, nasal "holes" severe irritation of nose, throat, bronchial tubes, and lungs. Burns to skin and eyes and external ulcers. Toxic - Liver and Kidney damage.

Emergency and First Aid Procedures: Flush skin and eyes with water for at least 15 minutes. Get medical attention. If inhaled, irrigate nasal passages and mouth with water. If swallowed and conscious, give water and induce vomiting. Get medical attention.

## REACTIVITY DATA

<input checked="" type="checkbox"/> Stable	<input type="checkbox"/> Unstable	Conditions to Avoid:
Incompatibility — Materials to Avoid: Any combustible organic or other readily oxidizable materials such as paper, wood, sulfur, aluminum, etc.		
Hazardous Decomposition Products: None known.		
Hazardous Polymerization: <input type="checkbox"/> May Occur <input checked="" type="checkbox"/> Will Not Occur		

## SPILL OR LEAK PROCEDURES

Spills: Collect spilled material in the most convenient and safe manner for reclamation or disposal. Treat residue with a reducing agent such as sodium sulfite. Neutralize with soda ash or lime. Absorb and place in suitable containers for proper disposal.
Waste Disposal Methods: Reduce to $Cr^{+3}$ with sodium sulfite or ferrous sulfate. Precipitate $Cr^{+3}$ in solution by neutralizing to pH 7.5 with soda ash or lime. Reclaim or dispose of precipitate in an EPA approved landfill.

## SPECIAL PROTECTION INFORMATION

Respirator: Use only NIOSH/MSHA approved respirators. Follow mfg. recommendations where dust, mists, fumes or vapors may be generated.		
Ventilation: Sufficient to keep below TLV limits.		
Gloves: Rubber	Eyes and Face: Chemical goggles and face shield	Other: Sufficient to prevent skin contact.
Handling and Storage: Store in a clean, cool, dry, well-ventilated area. Keep away from oxidizable materials. Avoid dusting and skin and eye contact.		

THIS PRODUCT SAFETY DATA SHEET IS OFFERED SOLELY FOR YOUR INFORMATION, CONSIDERATION AND INVESTIGATION.

McGean-Rohco, Inc. PROVIDES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, AND ASSUMES NO RESPONSIBILITY FOR ACCURACY OR COMPLETENESS OF THE DATA CONTAINED HEREIN

**McGean-Rohco, Inc.**

1250 Terminal Tower, Cleveland, Ohio 44113, 216/621-6425

#12111

**MATERIAL SAFETY  
DATA SHEET**

Product Name: ER-2 ETCHANT		Emergency Phone No.: 216/441/4900
Plant Address: 2910 Harvard Avenue Cleveland, OH 44109		Chemtrec Phone No. 800/424-9300
Prepared By: TSCA Coordinator	Issue Date: 8/80	Revised Date: 3rd 10/87

**INGREDIENTS AND HAZARDOUS COMPONENTS**

Material	%	TLV	C.A.S. #	Suspect Carcinogen
Chromium Trioxide	>90	0.1 mg/m <sup>3</sup>	1333-82-0	Yes

**PHYSICAL DATA**

Boiling Point: NA	Freezing Point: NA	Specific Gravity: Approximately 2.7	pH: NA
Vapor Pressure at 20° C: NA	Vapor Density (Air = 1): NA	% Volatiles by Volume: NA	Odor: None
Evaporation Rate (Butyl Acetate = 1) NA		Solubility in Water: Appreciable	
Appearance and Form: Dark red flakes or powder.			

**FIRE AND EXPLOSION HAZARD DATA**

Flash Point: NA	Flammable Limits in Air: Upper: NA Lower: NA
Test Method: NA	% By Volume
Extinguishing Media: NA	
Special Fire Fighting Procedures: Self-contained breathing apparatus should be worn in areas where chromic acid is stored.	
Unusual Fire and Explosion Hazards: Powerful oxidizing agent. May react with oxidizable substances rapidly enough to ignite them.	
DOT Classification: Oxidizer, Corrosive NA-1463	Note: UK = Unknown NA = Not Applicable

R W H A V E N

0 9 0 8 . 9 2

0908-2316

TRW-00948



## HEALTH HAZARD DATA

Effects of Overexposure and Primary Entries to Body: Primary entry through skin and inhalation of dust. Ulceration of mucous membranes of nose and mouth, nasal "holes" severe irritation of nose, throat, bronchial tubes, and lungs. Burns to skin and eyes and external ulcers. Toxic - Liver and Kidney damage.

Emergency and First Aid Procedures: Flush skin and eyes with water for at least 15 minutes. Get medical attention. If inhaled, irrigate nasal passages and mouth with water. If swallowed and conscious, give water and induce vomiting. Get medical attention.

## REACTIVITY DATA

<input checked="" type="checkbox"/> Stable	<input type="checkbox"/> Unstable	Conditions to Avoid:
Incompatibility — Materials to Avoid: Any combustible organic or other readily oxidizable materials such as paper, wood, sulfur, aluminum, etc.		
Hazardous Decomposition Products: None known.		
Hazardous Polymerization: <input type="checkbox"/> May Occur <input checked="" type="checkbox"/> Will Not Occur		

## SPILL OR LEAK PROCEDURES

Spills:  
Collect spilled material in the most convenient and safe manner for reclamation or disposal. Treat residue with a reducing agent such as sodium sulfite. Neutralize with soda ash or lime. Absorb and place in suitable containers for proper disposal.

Waste Disposal Methods:  
Reduce to  $\text{Cr}^{+3}$  with sodium sulfite or ferrous sulfate.  
Precipitate  $\text{Cr}^{+3}$  in solution by neutralizing to pH 7.5 with soda ash or lime.  
Reclaim or dispose of precipitate in an EPA approved landfill.

## SPECIAL PROTECTION INFORMATION

Respirator: Use only NIOSH/MSHA approved respirators.  
Follow mfg. recommendations where dust, mists, fumes or vapors may be generated.

Ventilation:  
Sufficient to keep below TLV limits.

Gloves: Rubber	Eye and Face: Chemical goggles and face shield	Other: Sufficient to prevent skin contact.
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Handling and Storage:  
Store in a clean, cool, dry, well-ventilated area.  
Keep away from oxidizable materials.  
Avoid dusting and skin and eye contact.

THIS PRODUCT SAFETY DATA SHEET IS OFFERED SOLELY FOR YOUR INFORMATION, CONSIDERATION AND INVESTIGATION.

McGEAN-ROHCO, INC. PROVIDES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, AND ASSUMES NO RESPONSIBILITY FOR ACCURACY OR COMPLETENESS OF THE DATA CONTAINED HEREIN



McGEAN ROHCO CHEMICAL CO., INC.  
1250 TERMINAL TOWER CLEVELAND, OHIO 44113

# PRODUCT SAFETY DATA SHEET

EQUIVALENT TO OSHA FORM NO.20

## A. GENERAL INFORMATION

TRADE NAME (COMMON NAME OR SYNONYM) <b>ER-2 ETCHANT Replenisher</b>		C.A.S. NO. <b>1333-82-0 (For CrO<sub>3</sub>)</b>	
CHEMICAL NAME <b>Chromium Trioxide &amp; Catalyst.</b>			
FORMULA <b>CrO<sub>3</sub> &amp; Catalyst</b>		MOLECULAR WEIGHT <b>99.99 (For CrO<sub>3</sub>)</b>	
COMPANY/PLANT ADDRESS (No., STREET, CITY, STATE AND ZIP CODE) <b>McGean-Rohco Chemical Co., Inc., 1250 Terminal Tower, Cleveland, OH 44113</b>			
CONTACT <b>TSCA Coordinator</b>	PHONE NUMBER <b>(216) 441-4900</b>	ISSUED DATE <b>8/21/80</b>	REVISED DATE <b>4/5/84</b>

## B. FIRST AID MEASURES

Skin: Wash with soap and water. Remove contaminated clothing. Eyes: Flush thoroughly with water for at least 15 minutes while holding eyelids apart to insure complete water contact. See a physician. Ingestion: Give milk or water to dilute. If it has not started, induce vomiting. (Chromic acid is an emetic). Get medical attention. Never give anything by mouth to an unconscious person.	EMERGENCY PHONE NUMBER OFFICE <b>(216) 441-4925</b>
	CHEMTREC <b>(800) 424-9300</b>

## C. HAZARDS INFORMATION

### FIRE AND EXPLOSION

FLASH POINT <b>Not Applicable. °C</b> <input type="checkbox"/> OPEN CUP <input type="checkbox"/> CLOSED CUP	AUTO IGNITION TEMPERATURE <b>Not Applicable. °C</b>	FLAMMABLE LIMITS IN AIR (% BY VOL.) LOWER <b>Not Applicable.</b> UPPER
UNUSUAL FIRE AND EXPLOSION HAZARDS <b>Powerful oxidizing agent. May react with oxidizable substances rapidly enough to ignite them.</b>		

### HEALTH

INHALATION <b>Ulcerations of mucous membranes of nose, mouth, nasal "holes". Severe irritation of nose, throat, bronchial tubes, and lungs.</b>	
INGESTION <b>Very toxic. Can cause liver and kidney damage. Severe burns of intestinal tract.</b>	
SKIN <b>Burns and external ulcers.</b>	
EYES <b>Severe burns and loss of vision.</b>	
PERMISSIBLE CONCENTRATION: AIR (SEE SECTION J) <b>0.1 mg/m<sup>3</sup> as CrO<sub>3</sub></b>	BIOLOGICAL
UNUSUAL CHRONIC TOXICITY <b>Cutaneous sensitization.</b>	

TRW-00950

0908-2318

#### D. PRECAUTIONS/PROCEDURES

<b>VENTILATION</b> Must be sufficient to meet TLV requirements.	
<b>NORMAL HANDLING</b> Avoid breathing mists or dusts. Avoid skin and eye contact.	
<b>STORAGE</b>	Store in a clean, cool, dry, well-ventilated area. Keep away from oxidizable materials.
<b>PRECAUTIONARY LABEL</b>	<input type="checkbox"/> ATTACHED <input type="checkbox"/> NOT ATTACHED
<b>DANGER!</b> Powerful oxidizer and highly toxic. Can cause burns and ulcers.	
<b>SPILL OR LEAK</b>	Collect spilled material in the most convenient and safe manner for reclamation or disposal. Avoid dusting. For liquids, cover with a reducing agent such as sodium sulfite or ferrous sulfate. Neutralize with soda ash or lime. Cover with absorbant material and place in containers to await proper disposal.
<b>FIRE EXTINGUISHING AGENTS RECOMMENDED</b> Water in large quantities.	
<b>SPECIAL FIRE FIGHTING PRECAUTIONS</b> Not Applicable.	
<b>FIRE EXTINGUISHING AGENTS TO AVOID</b> Not Applicable.	
<b>SPECIAL PRECAUTIONS/PROCEDURES</b> Chromic acid will attack most forms of metals, cloth, leather, plastics, rubber, and coatings and may cause spontaneous ignition.	

#### E. PERSONAL PROTECTIVE EQUIPMENT

<b>RESPIRATORY PROTECTION</b> Use only respirators that have been approved by Mine Safety, and Health Administration or NIOSH. See NIOSH Certified Equipment List, NIOSH Publication No. 80-144.	
<b>EYES AND FACE</b>	Chemical goggles and face shield.
<b>HANDS, ARMS, AND BODY</b>	Neoprene or other synthetic rubber gloves, apron, sleeves, and shoes. Wash after handling. Shower after work. Use fresh clothing daily.
<b>OTHER CLOTHING AND EQUIPMENT</b>	Impervious clothing sufficient to prevent skin contact. Eye wash stations and safety showers should be readily accessible.

## F. PHYSICAL DATA

MATERIAL IS (AT NORMAL CONDITIONS) <input type="checkbox"/> LIQUID <input checked="" type="checkbox"/> SOLID <input type="checkbox"/> GAS <input type="checkbox"/> _____		APPEARANCE AND ODOR Dark red flakes or crystals. Odorless.	
BOILING POINT    Decomposes MELTING POINT    197° C.		SPECIFIC GRAVITY (H <sub>2</sub> O = 1)    2.7	VAPOR DENSITY (AIR = 1) Not Applicable.
SOLUBILITY IN WATER 63 gm/100 gm HOH @ 20° C.		pH Not Applicable.	VAPOR PRESSURE (mm Hg at 20° C) Not Applicable.
EVAPORATION RATE Not Applicable.		% VOLATILES BY VOLUME Not Applicable.	Material is deliquescent.

## G. REACTIVITY DATA

STABILITY <input type="checkbox"/> UNSTABLE <input checked="" type="checkbox"/> STABLE	CONDITIONS TO AVOID
INCOMPATIBILITY (MATERIALS TO AVOID) Any combustible organic, or other readily oxidizable materials such as paper, wood, sulfur, aluminum, plastics, etc.	
HAZARDOUS DECOMPOSITION PRODUCTS Not applicable.	
HAZARDOUS POLYMERIZATION <input type="checkbox"/> MAY OCCUR <input checked="" type="checkbox"/> WILL NOT OCCUR	CONDITIONS TO AVOID

## H. HAZARDOUS INGREDIENTS (Mixtures Only)

MATERIAL OR COMPONENT	%	C.A.S. NO.

TRW-00952

## I. ENVIRONMENTAL

### WASTE DISPOSAL METHODS\*

Reduce to Chromium (III) using reducing agents such as sodium sulfite or ferrous sulfate.

Chromium (III) in solution can be precipitated as the hydrous chromic oxide by neutralizing to a pH of 7.5 with soda ash, caustic soda, or lime. The precipitate may be reclaimed or disposed of in sealed containers in an EPA-approved, secured land fill.

A summary of various methods can be found in the EPA "Treatability Manual", Volumes I through V; EPA-600/8-80-042.

\*DISPOSER MUST COMPLY WITH FEDERAL, STATE AND LOCAL DISPOSAL OR DISCHARGE LAWS.

## J. REFERENCES

### PERMISSIBLE CONCENTRATION REFERENCES

#### OSHA

\*EPA 440/5-80-035, "Ambient Water Quality Criteria for Chromium". Primary Drinking Water Regulations, 40 CFR, Part 141 (0.5 mg/l).

#### RCRA

### REGULATORY STANDARDS

Section 311 of the Federal Water Pollution Act. DOT classification: Chromic acid, solid (RQ-1000), oxidizer, NA 1463.

OSHA: 29CFR, Part 1910, Subpart Z.

RCRA Waste Number D007.

### GENERAL

NIOSH - Recommended Standard for Occupational Exposure to Chromic Acid.

NIOSH- Recommended Standard for Occupational Exposure to Chromium VI.

NIOSH/OSHA - "Occupational Health Guidelines for Chemical Hazards".

## K. ADDITIONAL INFORMATION

\* Individual states may vary.

This product is for Industrial use only.

Hazards, precautions, first aid, etc., information is abbreviated. More detailed information can be found in the references in Section J.

NIOSH recommends a PEL- (Permissible Exposure Limit) of 0.025 mg/m<sup>3</sup> Cr(VI).

TRW-00953

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0908-2321



OCEAN® Network

EMERGENCY PHONE 1-800-OLIN-911

**MATERIAL  
SAFETY DATA****SECTION I - IDENTIFICATION**

<b>CHEMICAL NAME &amp; SYNONYMS</b> ETP Copper, electrolyte tough pitch		
<b>CHEMICAL FAMILY</b> Copper	<b>FORMULA</b> Cu	<b>TRADE NAME</b> Alloy 110
<b>DESCRIPTION</b> Metal		<b>CAS NO.</b> 7440-50-8

**SECTION II - NORMAL HANDLING PROCEDURES**

<b>PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE</b> Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash hands with soap and water before eating or smoking. Avoid breathing dust or fumes.	
<b>PROTECTIVE EQUIPMENT</b>	<b>VENTILATION REQUIREMENTS</b>
Eyes Goggles Gloves Impervious Other NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur.	As required to keep airborne concentrations of copper below TLV.

**SECTION III - HAZARDOUS INGREDIENTS**

BASIC MATERIAL		OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust Fume	1 mg/m <sup>3</sup> 0.1 mg/m <sup>3</sup>	TD <sub>LO</sub> 120 ug/kg (human)	No data	Metal fume fever, respiratory irritation

**SECTION IV - FIRE AND EXPLOSION HAZARD DATA**

<b>FLASH POINT METHOD</b> Not Applicable	<b>OSHA CLASSIFICATION</b> Non-combustible	<b>FLAMMABLE EXPLOSIVE LIMITS</b>	<b>LOWER</b> N/A	<b>UPPER</b> N/A
<b>EXTINGUISHING MEDIA</b> Non-combustible - Choose extinguishing media suitable for surrounding materials.				
<b>SPECIAL FIRE HAZARD &amp; FIRE FIGHTING PROCEDURES</b> Use NIOSH/MSHA approved positive pressure self-contained breathing apparatus when any material is involved in a fire.				

**SECTION V - HEALTH HAZARD DATA**

<b>THRESHOLD LIMIT VALUE</b> Copper, Dust 1 mg/m <sup>3</sup> , Fume 0.2 mg/m <sup>3</sup> (ACGIH 1985-86)	
<b>SYMPTOMS OF OVER EXPOSURE</b> Dust and fume - chills, sneezing, congestion, metallic taste, nausea, fever	
<b>SKIN</b>	Dust or fume: Wash with soap and water before eating or smoking. If an irritation develops, call a physician.
<b>EYES</b>	Dust or fume: Flush thoroughly with water for 15 minutes, call a physician.
<b>INGESTION</b>	Dust: Not a likely route of exposure. If ingested, call a physician.
<b>INHALATION</b>	Dust or fume: Remove victim to fresh air, call a physician.

Chemical

CAS No.

TRW-00954

0908-2322

## SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50	ACUTE ORAL TD <sub>LO</sub> Copper 120 ug/kg human	CARCINOGENICITY	Not known to be carcinogenic
ACUTE DERMAL LD 50	No data	MUTAGENICITY	Not known to be mutagenic
ACUTE INHALATION LC 50	No data	EYE IRRITATION	Dust is irritating
		PRIMARY SKIN IRRITATION	Dust may be an irritant
PRINCIPAL ROUTES OF ABSORPTION Inhalation of dust or fume			
EFFECTS OF ACUTE EXPOSURE Respiratory irritation, chills, fever			
EFFECTS OF CHRONIC EXPOSURE None expected at industrial use condition. Overexposure may cause liver and kidney effects.			

## SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

## ACTION FOR MATERIAL RELEASE OR SPILL

Dust or Fume - Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

## TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

## WASTE DISPOSAL METHOD

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

## SECTION VIII - SHIPPING DATA

D.O.T. CLASS Not regulated

## SECTION IX - REACTIVITY DATA

STABLE	X	UNSTABLE	AT	°C	°F	HAZARDOUS POLYMERIZATION	MAY OCCUR
							WILL NOT OCCUR X
CONDITIONS TO AVOID Carbon monoxide during melting.							
INCOMPATIBILITY (Material to Avoid) (Dust and Fume) acetylene, chlorine							
HAZARDOUS DECOMPOSITION PRODUCTS copper fume							

## SECTION X - PHYSICAL DATA

MELTING POINT	1949°F	VAPOR PRESSURE	1 mm@1628°C	VOLATILES	N/A
BOILING POINT	No data	SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE	N/A
SPECIFIC GRAVITY (H <sub>2</sub> O = 1) *		pH	N/A	VAPOR DENSITY (Air = 1)	N/A
* DENSITY	.321 lbs/in <sup>3</sup>				

INFORMATION FURNISHED BY: Environmental Hygiene  
and Toxicology  
(203) 789-5436

DATE March 27, 1986

TRW-00955

Department of Environmental Hygiene and Toxicology  
(203) 789-5436

**Olin** CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904

OCEAN® Network

EMERGENCY PHONE 1-800-OLIN-911

Health	2
Flammability	1
Reactivity	1
Personal Protection	G

HMIS Ratings

# BOWMAN DISTRIBUTION MATERIAL SAFETY DATA SHEET

Health	2
Flammability	1
Reactivity	1
Specific Hazard	

NFPA Ratings

## SECTION I

PRODUCT NAME <b>"EASY" SEALANT ADHESIVE (LOW ODOR RTV SILICONE CLEAR)</b>		BOWMAN PART NO. <b>21500</b> (page 1 of 2)
SUPPLIER <b>Bowman Distribution, Barnes Group Inc.</b>		EMERGENCY TELEPHONE NO. <b>(216) 391-7200</b>
ADDRESS <b>850 East 72nd Street, Cleveland, OH 44103</b>		DATE <b>1/29/90</b>
HAZARDOUS MATERIAL DESCRIPTION, PROPER SHIPPING NAME, HAZARD CLASS, HAZARD ID NO. (49 CFR 172.101) <b>Consumer Commodity ORM-D UN-1956</b>		
ADDITIONAL HAZARD CLASSES (as applicable) <b>None</b>		
CHEMICAL FAMILY <b>Mixture</b>	FORMULA <b>BP-213</b>	

## SECTION II - HAZARDOUS INGREDIENTS

CAS REGISTRY NUMBER	%W	%V	CHEMICAL NAME(S)	OSHA PEL	ACGIH TLV	Other Limits	Listed as Carcinogen NTP, IARC or OSHA 1910(z) (specify)
22984-54-9	5		Methyl Tris Silane	N.E.	N.E.	N.E.	No
63148-62-9	58		Polydimethylsiloxane	N.E.	N.E.	N.E.	No
14808-60-7	30		Crystalline Silica	N.E.	N.E.	N.E.	No
7631-86-9	5		Amorphous Silica	20mppcf	10mglim <sup>3</sup>	N.E.	No
N.A.	1		Pigment	N.E.	N.E.	N.E.	No
N.A.	1		Non-hazardous	N.A.	N.A.	N.A.	No
Outer compartment contains a hydrochlorofluorocarbon mixture.							

\*ALL CHEMICAL COMPOUNDS MARKED WITH AN ASTERISK (\*) ARE TOXIC CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) OF 1986 AND 40 CFR PART 372.

## SECTION III - PHYSICAL DATA

BOILING POINT N.A. °F _____ °C _____	SPECIFIC GRAVITY (H <sub>2</sub> O = 1) 1.3		
VAPOR PRESSURE @ 70 °F _____ °C <input checked="" type="checkbox"/> mm Hg <input type="checkbox"/> psi	PERCENT VOLATILE BY VOLUME (%) <5%	PERCENT SOLID BY WEIGHT (%)	N.E.
VAPOR DENSITY (AIR = 1) Heavier than air	EVAPORATION RATE ( = 1) Butyl Acetate		
SOLUBILITY IN WATER <1%	PH =		
APPEARANCE AND ODOR Clear Paste/Slight	MATERIAL IS: PASTE		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 250 °F _____ °C _____	method used F.O.C.	FLAMMABLE LIMITS	LEL N.A.	UEL N.A.
EXTINGUISHING MEDIA Use water fog, dry chemical or carbon dioxide.				
SPECIAL FIRE FIGHTING PROCEDURES Cans may rupture when heated; wear self-retained breathing apparatus.				
UNUSUAL FIRE AND EXPLOSION HAZARDS Heated cans may burst; SiO <sub>2</sub> , CO, phosgene & halogen acids may be produced.				

21500 (page 1 of 2)

N.A. - Not Applicable  
N.E. - Not Established  
N.D. - Not Determined

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## SECTION V - HEALTH HAZARD DATA

<b>HEALTH HAZARDS (ACUTE AND CHRONIC - INCLUDE TARGET ORGAN EFFECTS)</b> May cause dizziness or narcosis in high vapor concentrations. Will cause defatting of skin. Effects are reversible. Long term exposure (years) vapor may cause lung, liver or kidney damage. The solvents listed have been reported to affect the central nervous system.	
<b>CONDITIONS TO AVOID</b> See above	
<b>SIGNS AND SYMPTOMS OF OVEREXPOSURE</b> Inhalation-difficulty in breathing. Skin-redness. Ingestion-vomiting.	
<b>PRIMARY ROUTES OF ENTRY</b> Inhalation <input checked="" type="checkbox"/> Skin Contact <input checked="" type="checkbox"/> Other (specify) _____ Ingestion.	
<b>EMERGENCY AND FIRST AID PROCEDURES</b> Give oxygen-do not induce vomiting. Gastric lavage. Wash eyes and skin with water.	
<b>MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE</b> Heart disease, respiratory disorders.	

## SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	High temperatures
<b>INCOMPATIBILITY (materials to avoid)</b> Water			
<b>HAZARDOUS DECOMPOSITION PRODUCTS:</b> In fire will decompose to carbon dioxide and water, SiO <sub>2</sub> , CO.			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	None

## SECTION VII - SPILL OR LEAK PROCEDURES

<b>STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED</b> Use absorbent sweeping compound to soak up material. Put into container. Dispose as hazardous waste.	
<b>WASTE DISPOSAL METHOD</b> Dispose as hazardous waste in accordance with EPA RCRA	
<b>CERCLA (Superfund) REPORTABLE QUANTITY (in lbs.)</b> N.E.	
<b>RCRA HAZARDOUS WASTE NO. (40 CFR 261.33)</b> Non-hazardous in the cured state.	
<b>VOLATILE ORGANIC COMPOUND (VOC)</b> as packaged, minus water)	<input type="checkbox"/> Theoretical _____ lb/gal N.A. <input type="checkbox"/> Analytical _____ lb/gal
NIL	

## SECTION VIII - SPECIAL PROTECTION INFORMATION

<b>RESPIRATORY PROTECTION (specify type)</b> Self contained breathing apparatus if above TLV limit exceeding.		
VENTILATION	<b>LOCAL EXHAUST (specify rate)</b> Yes	<b>SPECIAL</b> None
	<b>MECHANICAL (general) (specify rate)</b> None	<b>OTHER</b> None
<b>PROTECTIVE GLOVES (specify type)</b> None required if spraying		<b>EYE PROTECTION (specify type)</b> Wear eye protection
<b>OTHER PROTECTIVE EQUIPMENT</b> Long sleeves and long pants		

## SECTION IX - SPECIAL PRECAUTIONS

<b>PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING</b> Keep away from heat, sparks or open flame. Store at temperatures below 120°F.	
<b>OTHER PRECAUTIONS</b> None	

# BOWMAN DISTRIBUTION MATERIAL SAFETY DATA SHEET

## SECTION I

<b>PRODUCT NAME</b> <b>"Easy" Sealant Adhesive, Low Volatile Clear RTV Silicone</b>		<b>BOWMAN PART NO.</b> <b>21500</b> (page 1 of 2)
<b>SUPPLIER</b> BOWMAN DISTRIBUTION, BARNES GROUP INC.		<b>EMERGENCY TELEPHONE NO.</b> (216) 391-7200
<b>ADDRESS</b> 850 East 72nd Street, Cleveland, OH 44103		<b>DATE</b> 7/31/87
<b>HAZARDOUS MATERIAL DESCRIPTION, PROPER SHIPPING NAME, HAZARD CLASS, HAZARD ID NO. (49 CFR 172.101)</b> Consumer Commodity ORM-D UN		
<b>ADDITIONAL HAZARD CLASSES (as applicable)</b> None		
<b>CHEMICAL FAMILY</b> Pressurized product	<b>FORMULA</b> BP-113	

## SECTION II - HAZARDOUS INGREDIENTS

CAS REGISTRY NO.	%W	%V	CHEMICAL NAME(S)	Listed as a Carcinogen in NTP, IARC or OSHA 1910(z) (specify)
22984-54-9			Methyl Tris Silane	
9629-7			Methyl Ethyl Ketoxime	
Unknown			Organotin Catalyst	

## SECTION III - PHYSICAL DATA

<b>BOILING POINT</b> _____ °F _____ °C N.A.		<b>SPECIFIC GRAVITY (H<sub>2</sub>O = 1)</b>		N.A.	
<b>VAPOR PRESSURE</b> @ _____ °F _____ °C <input type="checkbox"/> mm Hg <input type="checkbox"/> psi <8		<b>PERCENT VOLATILE BY VOLUME (%)</b>		—	<b>PERCENT SOLID BY WEIGHT (%)</b> —
<b>VAPOR DENSITY (AIR = 1)</b>	3	<b>EVAPORATION RATE ( = 1)</b>		>1	
<b>SOLUBILITY IN WATER</b>	None	<b>pH =</b>		None	
<b>APPEARANCE AND ODOR</b> Paste like, slight medicinal odor					<b>IS MATERIAL: PASTE</b>

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

<b>FLASH POINT</b> _____ °F _____ °C method used >200°F		<b>FLAMMABLE LIMITS</b>		<b>LEL</b> None	<b>UEL</b> None
<b>EXTINGUISHING MEDIA</b> Use waterfog, dry chemical or carbon dioxide.					
<b>SPECIAL FIRE FIGHTING PROCEDURES</b> Contents under pressure; wear self-contained breathing apparatus.					
<b>UNUSUAL FIRE AND EXPLOSION HAZARDS</b> During fire, toxic gases such as CO and Oxide of silicon may be present.					

**21500** (page 1 of 2)

TRW-00958

## SECTION V - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE - Conditions to avoid Irritating to skin and eyes.	THRESHOLD LIMIT VALUE	None
	PERMISSIBLE EXPOSURE LIMIT	None
	OTHER LIMIT	
PRIMARY ROUTES OF ENTRY Inhalation <input type="checkbox"/> Skin Contact <input type="checkbox"/> Other (specify) Not Established		
EMERGENCY AND FIRST AID PROCEDURES Give oxygen. Do not induce vomiting. Gastric lavage. Wash eyes and skin with water.		

## SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	Humid condition (product cures on exposure to humidity)
INCOMPATIBILITY (materials to avoid) None			
HAZARDOUS DECOMPOSITION PRODUCTS Not established			
HAZARDOUS POLMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	None

## SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Use absorbent sweeping compound to soak up material. Put into container and dispose as hazardous waste.	
WASTE DISPOSAL METHOD Dispose in normal landfill as synthetic rubber.	
CERCLA (Superfund) REPORTABLE QUANTITY (in lbs) None	
RCRA HAZARDOUS WASTE NO. (40 CFR 261.33) D-001	
VOLATILE ORGANIC COMPOUND (VOC) (as packaged, minus water) N.A.	<input type="checkbox"/> Theoretical _____ lb/gal N.A.
	<input type="checkbox"/> Analytical _____ lb/gal N.A.

## SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type) Self contained breathing apparatus if above TLV limit.		
VENTILATION	LOCAL EXHAUST (specify rate) Normal use normal ventilation.	SPECIAL none
	MECHANICAL (general) (specify rate) none	OTHER none
PROTECTIVE GLOVES (specify type) N.A.	EYE PROTECTION (specify type) Wear safety glasses.	
OTHER PROTECTIVE EQUIPMENT		

## SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Keep away from heat, sparks or open flame. Store at temperatures below 120° F.	
OTHER PRECAUTIONS None	

JUN - 5 1992


**McGean-Rohco, Inc.**

1250 Terminal Tower, Cleveland, Ohio 44113, 216/621-6425

**MATERIAL SAFETY  
DATA SHEET**

Product Name: ECOLOZINC CONDITIONER		Emergency Phone No.: 216/441-4900
Plant Address: 2910 Harvard Avenue Cleveland, OH 44109		Chemtrec Phone No. 800/424-9300
Prepared By: TSCA Coordinator	Issue Date: 1/80	Revised Date: 2nd 4/87

**INGREDIENTS AND HAZARDOUS COMPONENTS**

Material	%	TLV	C.A.S. #	Suspect Carcinogen
Contains nothing considered as hazardous under Federal or State regulations.	NA	NA	NA	NO

**PHYSICAL DATA**

Boiling Point: NA	Freezing Point: NA	Specific Gravity: UK	pH: 1% solution 10.5 - 11.5
Vapor Pressure at 20°C: NA	Vapor Density (Air = 1): NA	% Volatiles by Volume:	Odor: None
Evaporation Rate (Butyl Acetate = 1) NA		Solubility in Water: 103 gm/100 gm @ 25°C.	
Appearance and Form: white crystalline powder			

**FIRE AND EXPLOSION HAZARD DATA**

Flash Point: NA	Flammable Limits in Air:
Test Method: NA	% By Volume Upper: NA Lower: NA
Extinguishing Media: NA	
Special Fire Fighting Procedures: NA	
Unusual Fire and Explosion Hazards: None	
DOT Classification: NA	Note: UK = Unknown NA = Not Applicable

## HEALTH HAZARD DATA

Effects of Overexposure and Primary Entries to Body:

Primary entry thru cuts.

May mildly irritate skin or eyes.

Emergency and First Aid Procedures:

Wash skin with soap and water. Flush eyes with water for at least 15 minutes.  
If any irritation persists, see a physician.

## REACTIVITY DATA

☒ Stable☐ Unstable

Conditions to Avoid:

Incompatibility — Materials to Avoid:

None known

Hazardous Decomposition Products:

None known

Hazardous Polymerization:

☐ May Occur☒ Will Not Occur

## SPILL OR LEAK PROCEDURES

Spills:

Flush with water

Waste Disposal Methods:

Bury in an approved landfill.

Follow all Local, State and Federal regulations

## SPECIAL PROTECTION INFORMATION

Respirator:

Not normally required

Ventilation:

Mechanical

Gloves:

Rubber

Eye and Face:

safety glasses

Other:

Sufficient to prevent skin contact.

Handling and Storage:

Normal handling and storage.

Avoid dusting

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**McGean-Rohco, Inc.**

1250 Terminal Tower, Cleveland, Ohio 44113, 216/421-6425

**MATERIAL SAFETY  
DATA SHEET**

Product Name: <b>ECODEZINC PURIFIER A</b>		Emergency Phone No.: <b>216/441-4900</b>
Plant Address: <b>2910 Harvard Avenue</b> <b>Cleveland, OH 44109</b>		Chemirec Phone No.: <b>800/424-9300</b>
Prepared By: <b>TSCA Coordinator</b>	Issue Date: <b>1/80</b>	Revised Date: <b>3rd 6/86</b>

**INGREDIENTS AND HAZARDOUS COMPONENTS**

Material	%	TLV	C.A.S. #	Excess Coverage
Thiourea	<10	NA	62-56-6	YES

**PHYSICAL DATA**

Boiling Point: <b>&gt;100°C</b>	Freezing Point: <b>UK</b>	Specific Gravity: <b>1.02</b>	pH: <b>7-8</b>
Vapor Pressure at 20° C: <b>As HOH</b>	Vapor Density (Air = 1): <b>As HOH</b>	% Volatiles by Volume: <b>90</b>	Odor: <b>faint</b>
Evaporation Rate (Butyl Acetate = 1): <b>&lt;1</b>		Solubility in Water: <b>Complete</b>	
Appearance and Form: <b>colorless liquid</b>			

**FIRE AND EXPLOSION HAZARD DATA**

Flash Point: <b>None</b>	Flammable Limits in Air:	
Test Method: <b>NA</b>	% By Volume	Upper: <b>NA</b> Lower: <b>NA</b>
Extinguishing Media: <b>NA</b>		
Special Fire Fighting Procedures: <b>NA</b>		
Unusual Fire and Explosion Hazards: <b>None</b>		
DOT Classification: <b>ORM-E</b>	<b>NA-9188</b>	Note: <b>UK = Unknown</b> <b>NA = Not Applicable</b>

## Effects of Overexposure and Primary Entries to Body:

Primary entry through cuts.

May irritate skin or eyes.

Possible sensitizer

CHRONIC: Anemia, Leukopenia.

## Emergency and First Aid Procedures

Wash skin with soap and water. Flush eyes with water for at least 15 minutes.  
If irritation persists, see a physician. If ingested, induce vomiting.

## REACTIVITY DATA

<input checked="" type="checkbox"/> Stable	<input type="checkbox"/> Unstable	Conditions to Avoid:
Incompatibility — Materials to Avoid:		
NA		
Hazardous Decomposition Products:		
NA		
Hazardous Polymerization:		
<input type="checkbox"/> May Occur <input checked="" type="checkbox"/> Will Not Occur		

## SPILL OR LEAK PROCEDURES

Spills:	Flush with water.
Waste Disposal Methods:	Flush to sewer with water. Follow all local, state and Federal regulations.

## SPECIAL PROTECTION INFORMATION

Respirator:	Not normally required.	
Ventilation:	Normal	
Gloves: Rubber	Eye and Face: chemical goggles	Other: Sufficient to prevent skin contact.
Handling and Storage:		
Normal handling and storage.		

THIS PRODUCT SAFETY DATA SHEET IS OFFERED SOLELY FOR YOUR INFORMATION, CONSIDERATION AND INVESTIGATION

McGEAN-ROHCO, INC. PROVIDES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, AND ASSUMES NO RESPONSIBILITY FOR ACCURACY OR COMPLETENESS OF THE DATA CONTAINED HEREIN

PRODUCT NAME: ECOLOZINC 20/20 MAINTENANCE C

MSDS No.: 10959

REVISION: 4

PREPARED BY: TSCA COORDINATOR

ISSUE DATE: 01/01/85

REVISION DATE: 04/30/91

-----  
SECTION A. MATERIAL IDENTIFICATION.

MANUFACTURER: McGEAN-ROHCO, INC.

CHEMTREC:

TELEPHONE #: 800-424-9300

2910 HARVARD AVE.  
CLEVELAND OH 44105  
TELEPHONE: 216-441-4900-----  
SECTION B. INGREDIENTS AND HAZARDS.

INGREDIENT: FORMALDEHYDE--SARA 313 CHEMICAL

CAS NUMBER: 50-00-0 0.1 - 0.3%  
EXPOSURE LIMIT: TWA: 1 PPM  
SUSPECT CARCINOGEN: YES-----  
SECTION C. PHYSICAL DATA.APPEARANCE: PALE YELLOW LIQUID  
ODOR: PUNGENTBOILING POINT: ABOVE 100 C  
FREEZING POINT: UNKNOWNSPECIFIC GRAVITY: 1.04  
PH: 3VAPOR PRESSURE: UNKNOWN  
VAPOR DENSITY: UNKNOWN

EVAPORATION RATE: AS WATER

% VOLATILE BY VOLUME: 50  
SOLUBILITY IN WATER: 100%-----  
SECTION D. FIRE AND EXPLOSION HAZARD DATA.FLASH POINT: NONE  
TEST METHOD: NA

## HAZARD SYMBOL CODES

LIMITS: LEL: NA  
UEL: NA

	NFPA	HMS
HEALTH:	1	1
FLAMMABILITY:	0	0
REACTIVITY:	0	0
SPECIAL:	0	0

EXTINGUISHING MEDIA: NA

SPECIAL FIRE FIGHTING NONE  
PROCEDURES:UNUSUAL FIRE OR NONE  
EXPLOSION HAZARDS:

TRW-00964

RECEIVED

JUN - 5 1992

0908-2332



PRODUCT NAME: ECOLOZING 20/20 MAINTENANCE C

MSDS No.: 10959

PREPARED BY: TSCA COORDINATOR

ISSUE DATE: 01/01/85

REVISION: 4

REVISION DATE: 04/30/91

-----  
SECTION E. REACTIVITY DATA.

MATERIAL IS STABLE.  
HAZARDOUS POLYMERIZATION WILL NOT OCCUR.

CONDITIONS TO AVOID: NA

CHEMICAL INCOMPATIBILITIES: NONE KNOWN

HAZARDOUS DECOMPOSITION PRODUCTS: NONE KNOWN

-----  
SECTION F. HEALTH HAZARD DATA.

SUMMARY OF RISKS: SARA HAZARD -- CHRONIC

MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY CONTACT: RESPIRATORY

TARGET ORGANS: SKIN, EYES, MUCCUS MEMBRANES

PRIMARY ENTRY ROUTES: CONTACT AND INHALATION

ACUTE EFFECTS: MAY IRRITATE SKIN OR EYES

CHRONIC EFFECTS: FORMALDEHYDE IS A SUSPECT CARCINOGEN

SIGNS & SYMPTOMS OF OVEREXPOSURE:

EYE CONTACT: IRRITATION, WATERING

SKIN CONTACT: IRRITATION

INHALATION: IRRITATION

INGESTION: IRRITATION OF MOUTH AND THROAT

TRW-00965

0908-2333

PRODUCT NAME: ECOLOZINC 20/20 MAINTENANCE C

MSDS No.: 10959

REVISION: 4

PREPARED BY: TSCA COORDINATOR ISSUE DATE: 01/01/85 REVISION DATE: 04/30/91

EMERGENCY & FIRST AID PROCEDURES:

EYE CONTACT: FLUSH WITH WATER FOR AT LEAST 15 MINUTES. IF ANY IRRITATION PERSISTS, SEE A PHYSICIAN.

SKIN CONTACT: WASH WITH SOAP AND WATER.

INHALATION: REMOVE TO FRESH AIR.

INGESTION: INDUCE VOMITING.

SECTION G. SPILL, LEAK AND DISPOSAL PROCEDURES.

SPILL/LEAK PROCEDURES: FLUSH WITH WATER.

WASTE MANAGEMENT & DISPOSAL PROCEDURES: FLUSH WITH WATER TO SEWER. FOLLOW ALL LOCAL, STATE AND FEDERAL REGULATIONS.

RCRA # (IF DISPOSED AS RECEIVED): NONE

SECTION H. SPECIAL PROTECTION INFORMATION

PERSONAL PROTECTIVE EQUIPMENT:

GOGGLES: CHEMICAL GOGGLES.

GLOVES: RUBBER.

RESPIRATOR: IF TWA IS EXCEEDED, MUST BE NIOSH OR MSHA APPROVED. SUFFICIENT TO PREVENT SKIN CONTACT.

OTHER:

WORKPLACE CONSIDERATIONS:

VENTILATION: SUFFICIENT TO KEEP BELOW TWA LIMITS.

SAFETY STATIONS: EYE WASH.

OTHER: NA

PRODUCT NAME: ECOLOZINC 20/20 MAINTENANCE C

MSDS No.: 10959

REVISION: 4

PREPARED BY: TSCA COORDINATOR ISSUE DATE: 01/01/85 REVISION DATE: 04/30/91

-----  
SECTION I. SPECIAL PRECAUTIONS.

SPECIAL HANDLING & STORAGE PROCEDURES: NORMAL HANDLING AND STORAGE.

C.O.T. CLASS: NONE  
IMCC CLASS: NONE

LN REGISTER: NONE  
LN REGISTER: NONE

-----  
EXPLANATION OF SYMBOLS

NA = NOT APPLICABLE

UK = UNKNOWN

-----  
THIS MATERIAL SAFETY DATA SHEET IS OFFERED SOLELY FOR YOUR INFORMATION,  
CONSIDERATION, AND INVESTIGATION. WHILE THE INFORMATION AND RECOMMENDATIONS  
SET FORTH HEREIN ARE BELIEVED TO BE ACCURATE AS OF THE DATE HEREOF,  
McGEAN-ROHCO, INC. MAKES NO WARRANTY WITH RESPECT THERETO AND DISCLAIMS ALL  
LIABILITY FROM RELIANCE THEREON.

TRW-00967

0908-2335

PRODUCT NAME: ECOLOZING 20/20 TONER

MSDS No.: 1096C

PREPARED BY: TSCA COORDINATOR ISSUE DATE: 01/01/85 REVISION: 2  
REVISION DATE: 08/01/91

-----  
SECTION A. MATERIAL IDENTIFICATION.

MANUFACTURER: McGEAN-ROHCO, INC.

CHEMTREC:  
TELEPHONE #: 800-424-9300

2910 HARVARD AVE.  
CLEVELAND OH 44105  
TELEPHONE: 216-441-4900

-----  
SECTION B. INGREDIENTS AND HAZARDS.

INGREDIENT: CONTAINS NOTHING CONSIDERED HAZARDOUS BY STATE OR FEDERAL  
REGULATIONS.  
CAS NUMBER: NA  
EXPOSURE LIMIT: TWA: NA  
SUSPECT CARCINOGEN: NO

-----  
SECTION C. PHYSICAL DATA.

APPEARANCE: GOLD LIQUID  
ODOR: SLIGHT

BOILING POINT: > 100C  
FREEZING POINT: UK

SPECIFIC GRAVITY: 1.04  
PH: 5-6

VAPOR PRESSURE: AS WATER  
VAPOR DENSITY: AS WATER  
% VOLATILE BY VOLUME: NA  
SOLUBILITY IN WATER: 100%

EVAPORATION RATE: AS WATER

-----  
SECTION D. FIRE AND EXPLOSION HAZARD DATA.

FLASH POINT: NONE  
TEST METHOD: NA

HAZARD SYMBOL CODES

LIMITS: LEL: NA  
UEL: NA

	NFPA	HMIS
HEALTH:	C	C
FLAMMABILITY:	C	0
REACTIVITY:	C	0
SPECIAL:		

EXTINGUISHING MEDIA: NOT FLAMMABLE

SPECIAL FIRE FIGHTING NONE  
PROCEDURES:

UNUSUAL FIRE OR NONE  
EXPLOSION HAZARDS:

TRW-00968

RECEIVED

JUN - 5 1992

0908-2336

PRODUCT NAME: ECOLCZINC 20/20 TONER

MSDS No.: 10960

REVISION: 2

PREPARED BY: TSCA COORDINATOR ISSUE DATE: 01/01/85 REVISION DATE: 08/01/91

-----  
SECTION E. REACTIVITY DATA.

MATERIAL IS STABLE.  
HAZARDOUS POLYMERIZATION WILL NOT OCCUR.

CONDITIONS TO  
AVOID:

CHEMICAL INCOMPATIBILITIES: NONE KNOWN

HAZARDOUS DECOMPOSITION PRODUCTS: NONE KNOWN

-----  
SECTION F. HEALTH HAZARD DATA.

SUMMARY OF RISKS: SARA-NA

MEDICAL CONDITIONS WHICH MAY BE  
AGGRAVATED BY CONTACT: NONE KNOWN

TARGET ORGANS: SKIN, EYES

PRIMARY ENTRY ROUTES: THROUGH CONTACT

ACUTE EFFECTS: WHILE THERE IS NO DATA TO SHOW ANY HARMFUL EFFECTS  
IT IS POSSIBLE THAT IRRITATION OF SKIN OR EYES OF  
OF PARTICULARLY SENSITIVE INDIVIDUALS COULD OCCUR.

CHRONIC EFFECTS: NONE KNOWN

SIGNS & SYMPTOMS OF OVEREXPOSURE:

EYE CONTACT: POSSIBLE IRRITATION.

SKIN CONTACT: POSSIBLE SLIGHT IRRITATION ON EXTENDED CONTACT.

INHALATION: NONE KNOWN.

INGESTION: NONE KNOWN.

PRODUCT NAME: ECOLOGZING 20/20 TONER

MSDS No.: 1096C

REVISION: 2

PREPARED BY: TSCA COORDINATOR ISSUE DATE: 01/01/85 REVISION DATE: 08/01/91

EMERGENCY & FIRST AID PROCEDURES:

EYE CONTACT: FLUSH WITH WATER FOR AT LEAST 15 MINUTES. IF ANY IRRITATION PERSISTS, SEE A PHYSICIAN.

SKIN CONTACT: WASH WITH SOAP AND WATER.

INHALATION: NA

INGESTION: INDUCE VOMITING

SECTION G. SPILL, LEAK AND DISPOSAL PROCEDURES.

SPILL/LEAK PROCEDURES: FLUSH SPILL AREA WITH WATER.

WASTE MANAGEMENT & DISPOSAL PROCEDURES: FLUSH WITH WATER TO SEWER. FOLLOW ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

RCRA # (IF DISPOSED AS RECEIVED): NONE

SECTION H. SPECIAL PROTECTION INFORMATION

PERSONAL PROTECTIVE EQUIPMENT:

GOGGLES: CHEMICAL GOGGLES.

GLOVES: RUBBER.

RESPIRATOR: NOT REQUIRED.

OTHER: SUFFICIENT TO PREVENT SKIN CONTACT.

WORKPLACE CONSIDERATIONS:

VENTILATION: NORMAL.

SAFETY STATIONS: EYE WASH.

OTHER:

PRODUCT NAME: ECOLOZINC 20/20 TONER

MSDS No.: 1096C  
REVISION: 2

PREPARED BY: TSCA COORDINATOR ISSUE DATE: 01/01/85 REVISION DATE: 08/01/91

-----  
SECTION I. SPECIAL PRECAUTIONS.

SPECIAL HANDLING & STORAGE PROCEDURES: NORMAL HANDLING AND STORAGE.

D.O.T. CLASS: NONE  
IMCC CLASS: NONE

UN REGISTER: NONE  
UN REGISTER: NONE

-----  
EXPLANATION OF SYMBOLS

NA = NOT APPLICABLE

UK = UNKNOWN

-----  
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CONSIDERATION, AND INVESTIGATION. WHILE THE INFORMATION AND RECOMMENDATIONS  
SET FORTH HEREIN ARE BELIEVED TO BE ACCURATE AS OF THE DATE HEREOF,  
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LIABILITY FROM RELIANCE THEREON.  
-----

TRW-00971

0908-2339

**McGean-Rohco, Inc.**

1250 Terminal Tower, Cleveland, Ohio 44113, 216/621-6425

**MATERIAL SAFETY  
DATA SHEET**

PROD # 10107

<b>Product Name:</b> ECOLOZINE 2001-WC		<b>Emergency Phone No.:</b> 216/441-4900
<b>Plant Address:</b> 2910 Harvard Avenue Cleveland, OH 44109		<b>Chemtrec Phone No.</b> 800/424-9300
<b>Prepared By:</b> TSCA Coordinator	<b>Issue Date:</b> 10/85	<b>Revised Date:</b> NA

**INGREDIENTS AND HAZARDOUS COMPONENTS**

Material	%	TLV	C.A.S. #	Suspect Carcinogen
NA	NA	NA	NA	NA

**PHYSICAL DATA**

<b>Boiling Point:</b> NA	<b>Freezing Point:</b> NA	<b>Specific Gravity:</b> 1.76	<b>pH:</b> NA
<b>Vapor Pressure at 20° C:</b> NA	<b>Vapor Density (Air = 1):</b> NA	<b>% Volatiles by Volume:</b> NA	<b>Odor:</b> None
<b>Evaporation Rate (Butyl Acetate = 1)</b> NA		<b>Solubility in Water:</b> 1390 g/L @ 20°C	
<b>Appearance and Form:</b> White crystals			

**FIRE AND EXPLOSION HAZARD DATA**

<b>Flash Point:</b> NA	<b>Flammable Limits in Air:</b>
<b>Test Method:</b> NA	<b>% By Volume</b> Upper: NA Lower: NA
<b>Extinguishing Media:</b> NA	
<b>Special Fire Fighting Procedures:</b> NA	
<b>Unusual Fire and Explosion Hazards:</b> None	
<b>DOT Classification:</b> NA	<b>Note:</b> UK = Unknown NA = Not Applicable



## HEALTH HAZARD DATA

## Effects of Overexposure and Primary Entries to Body:

Primary entry through skin.  
May mildly irritate skin or eyes.

## Emergency and First Aid Procedures:

Wash skin with soap and water  
Flush eyes with water for at least 15 minutes.  
If any irritation persists, see a physician.

## REACTIVITY DATA

☒ Stable☐ Unstable

Conditions to Avoid:

Incompatibility — Materials to Avoid:

Alkalies

Hazardous Decomposition Products:

NA

Hazardous Polymerization:

☐ May Occur☒ Will Not Occur

## SPILL OR LEAK PROCEDURES

## Spills:

Sweep or vacuum up.

## Waste Disposal Methods:

Send to sanitary land fill.  
Follow all Local, State, and Federal Regulations.

## SPECIAL PROTECTION INFORMATION

## Respirator:

Not normally required.

## Ventilation:

Mechanical

## Gloves:

Rubber

## Eye and Face:

Chemical goggles

## Other:

Sufficient to prevent skin contact.

## Handling and Storage:

Normal handling and storage.

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PRODUCT NAME: ECOLOZINC 2003 LCD

MSDS No.: 10033

PREPARED BY: TSCA COORDINATOR ISSUE DATE: 11/01/82 REVISION: 2

REVISION DATE: 11/20/91

-----  
SECTION A. MATERIAL IDENTIFICATION.

MANUFACTURER: McGEAN-ROHCO, INC.

CHEMTREC:  
TELEPHONE #: 800-424-9300

2910 HARVARD AVE.  
CLEVELAND OH 44105  
TELEPHONE: 216-441-4900

-----  
SECTION B. INGREDIENTS AND HAZARDS.

INGREDIENT: CONTAINS NOTHING CONSIDERED HAZARDOUS BY STATE OR FEDERAL  
REGULATIONS.  
CAS NUMBER: NA  
EXPOSURE LIMIT: TWA: NA  
SUSPECT CARCINOGEN: NO

-----  
SECTION C. PHYSICAL DATA.

APPEARANCE: COLORLESS LIQUID  
ODOR: SWEETISH

BOILING POINT: > 100C  
FREEZING POINT: UK

SPECIFIC GRAVITY: 1.02  
pH: 3-4

VAPOR PRESSURE: AS WATER  
VAPOR DENSITY: AS WATER

EVAPORATION RATE: AS WATER

% VOLATILE BY VOLUME: NA  
SOLUBILITY IN WATER: 100%

-----  
SECTION D. FIRE AND EXPLOSION HAZARD DATA.

FLASH POINT: NONE  
TEST METHOD: NA

HAZARD SYMBOL CODES  
NFPA HMIS

LIMITS: LEL: NA  
UEL: NA

HEALTH: C O  
FLAMMABILITY: C O  
REACTIVITY: C O  
SPECIAL:

EXTINGUISHING MEDIA: NOT FLAMMABLE

SPECIAL FIRE FIGHTING NONE  
PROCEDURES:

UNUSUAL FIRE OR NONE  
EXPLOSION HAZARDS:

TRW-00974

RECEIVED

JUN - 5 1992

0908-2342

PRODUCT NAME: ECOLOZINC 2003 LCD

MSCS No.: 10033

PREPARED BY: TSCA COORDINATOR ISSUE DATE: 11/01/82 REVISION: 2  
REVISION DATE: 11/20/91

-----  
SECTION E. REACTIVITY DATA.

MATERIAL IS STABLE.  
HAZARDOUS POLYMERIZATION WILL NOT OCCUR.

CONDITIONS TO  
AVOID:

CHEMICAL NONE KNOWN  
INCOMPATIBILITIES:

HAZARDOUS DECOMPOSITION NONE KNOWN  
PRODUCTS:

-----  
SECTION F. HEALTH HAZARD DATA.

SUMMARY OF RISKS: SARA-NA

MEDICAL CONDITIONS NONE KNOWN  
WHICH MAY BE  
AGGRAVATED BY CONTACT:

TARGET ORGANS: SKIN, EYES

PRIMARY ENTRY ROUTES: THROUGH CONTACT

ACUTE EFFECTS: WHILE THERE IS NO DATA TO SHOW ANY HARMFUL EFFECTS  
IT IS POSSIBLE THAT IRRITATION OF SKIN OR EYES OF  
CHRONIC EFFECTS: OF PARTICULARLY SENSITIVE INDIVIDUALS COULD OCCUR.  
NONE KNOWN

SIGNS & SYMPTOMS OF OVEREXPOSURE:

EYE CONTACT: POSSIBLE IRRITATION.

SKIN CONTACT: POSSIBLE SLIGHT IRRITATION ON EXTENDED CONTACT.

INHALATION: NONE KNOWN.

INGESTION: NONE KNOWN.

PRODUCT NAME: ECOLOZINC 2003 LCD

MSDS No.: 10033

PREPARED BY: TSCA COORDINATOR

ISSUE DATE: 11/01/82

REVISION: 2

REVISION DATE: 11/20/91

EMERGENCY & FIRST AID PROCEDURES:

EYE CONTACT: FLUSH WITH WATER FOR AT LEAST 15 MINUTES. IF ANY IRRITATION  
PERSISTS, SEE A PHYSICIAN.

SKIN CONTACT: WASH WITH SOAP AND WATER.

INHALATION: NA

INGESTION: INDUCE VOMITING

SECTION G. SPILL, LEAK AND DISPOSAL PROCEDURES.

SPILL/LEAK PROCEDURES: FLUSH SPILL AREA WITH WATER.

WASTE MANAGEMENT & DISPOSAL PROCEDURES: FLUSH WITH WATER TO SEWER.  
FOLLOW ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

RCRA # (IF DISPOSED AS RECEIVED): NONE

SECTION H. SPECIAL PROTECTION INFORMATION

PERSONAL PROTECTIVE EQUIPMENT:

GOGGLES: CHEMICAL GOGGLES.

GLOVES: RUBBER.

RESPIRATOR: NOT REQUIRED.

OTHER: SUFFICIENT TO PREVENT SKIN CONTACT.

WORKPLACE CONSIDERATIONS:

VENTILATION: NORMAL.

SAFETY STATIONS: EYE WASH.

OTHER:

TRW-00976

0908-2344

PRODUCT NAME: ECOLOZINC 2003 LCD

MSDS No.: 10033

REVISION: 2

PREPARED BY: TSCA COORDINATOR ISSUE DATE: 11/01/82 REVISION DATE: 11/20/91

-----  
SECTION I. SPECIAL PRECAUTIONS.

SPECIAL HANDLING & STORAGE PROCEDURES: NORMAL HANDLING AND STORAGE.

D.O.T. CLASS: NONE  
IMCC CLASS: NONE

UN REGISTER: NONE  
UN REGISTER: NONE

-----  
EXPLANATION OF SYMBOLS

NA = NOT APPLICABLE

UK = UNKNOWN

-----  
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McGEAN-ROHCO, INC. MAKES NO WARRANTY WITH RESPECT THERETO AND DISCLAIMS ALL  
LIABILITY FROM RELIANCE THEREON.

Health 2  
Flammability 3  
Reactivity 0

# MATERIAL SAFETY DATA SHEET

PRODUCT CODE: 4292-3FH88I

DATE OF PREP. August 28, 1990

## Section I

MANUFACTURER: RAFFI & SWANSON, INC.  
100 EAMES STREET  
WILMINGTON, MA 01887

EMERGENCY TELEPHONE NO.: 617-933-4200

TRADE NAME: None

MANUFACTURERS' CODE IDENTIFICATION:

Eggshell Beige Bake Enamel 4292-3FH88I

PRODUCT CLASS: Solvent Based Coating

230

THIS PRODUCT IS A MIXTURE CONTAINING ONE OR MORE HAZARDOUS INGREDIENTS.

INFORMATION ON THE COMPOSITION OF RAFFI & SWANSON, INC. PRODUCTS IS CONFIDENTIAL PROPRIETARY INFORMATION AND IS PROVIDED SOLELY TO AID IN SAFE HANDLING OF THESE MATERIALS. USE OR DISCLOSURE FOR ANY OTHER PURPOSE IS EXPRESSLY FORBIDDEN.

## Section II — HAZARDOUS INGREDIENTS

INGREDIENTS	CAS NUMBER	APPROX. PERCENT BY WEIGHT	TLV		LEL % BY VOL	VAPOR PRESSURE mm of Hg
			PPM	mg/M <sup>3</sup>		
Xylol †	1330-20-7	34	100		1.0	5.9
n-Butyl Alcohol-skin †	71-36-3	5	50		1.4	4.3
Ethyl Benzene †	100-41-4	4	100		1.0	10
Formaldehyde *C* †	50-00-0	0.45	1		--Not Applicable--	
Talc (dispersed in liquid)	14807-96-6	--	-----Not Applicable-----			

† Subject to the reporting requirements of EPA Reg. 40 CFR 372 (SARA Title III, Sec. 313).

\*C\* indicates a carcinogen or suspect carcinogen according to ACGIH, OSHA, NTP or IARC.

## Section III — PHYSICAL DATA

EVAPORATION RATE: ☐ FASTER ☒ SLOWER, THAN ETHER

VAPOR DENSITY: ☒ HEAVIER ☐ LIGHTER, THAN AIR

BOILING RANGE: 243°-291°F PERCENT VOLATILE BY VOL: 62%

WEIGHT PER GAL: 10.24#

## Section IV — FIRE AND EXPLOSION HAZARD DATA

FLAMMABILITY CLASSIFICATION:

FLASH POINT (closed cup): 59°F lowest  
flashing component

LEL: 1.0%

DOT: Flammable Liquid

OSHA: Flammable Liquid-Class IB

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical or foam.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Keep containers tightly closed. Isolate from heat, sparks and open flame. Do not apply to hot surfaces.  
ed containers may explode when exposed to extreme heat.

SPECIAL FIRE FIGHTING PROCEDURES: Water may be ineffective. Water may be used to cool closed containers. Irritating or toxic gases may be present.  
Use self-contained breathing apparatus.

INFORMATION PRESENTED IS ACCURATE TO THE BEST KNOWLEDGE OF RAFFI & SWANSON, INC.. RAFFI AND SWANSON, INC. ASSUMES NO  
LEGAL RESPONSIBILITY FOR LOSS OR INJURY RESULTING FROM THE USE OF THESE DATA OR ANY MATERIALS DESIGNATED.

S-527

0908-2346

TRW-00978

## Section V — HEALTH HAZARD DATA (Based on data for individual ingredients)

THRESHOLD LIMIT VALUE - See Section IIEFFECTS OF OVEREXPOSURECHRONIC TOXICITY: See Section IX.INHALATION: Vapor irritating to eyes, nose, and throat. Can cause headache, dizziness, nausea, weakness, loss of consciousness. Prolonged overexposure may cause permanent injury.SKIN: Penetrates skin.

Prolonged and repeated contact may cause drying of the skin, and absorption of harmful amounts.

EYE CONTACT: Burning and irritation.INGESTION: Do not take internally. May cause nausea, vomiting, diarrhea and other toxic effects.EMERGENCY AND FIRST AID PROCEDURESINHALATION: Provide fresh air. Give artificial respiration or oxygen if necessary. CALL A PHYSICIAN.SKIN: Wash thoroughly with soap and water. Remove contaminated clothing and shoes. Wash clothes thoroughly before re-use.EYE CONTACT: Flush with water for at least 15 minutes. SEE PHYSICIAN.INGESTION: DO NOT INDUCE VOMITING.

If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. CALL A PHYSICIAN.

## Section VI — REACTIVITY DATA

STABILITY: ☐ UNSTABLE ☒ STABLEHAZARDOUS POLYMERIZATION: ☐ MAY OCCUR ☒ WILL NOT OCCURHAZARDOUS DECOMPOSITION PRODUCTS: Combustion produces carbon monoxide and carbon dioxide. Unidentified organic compounds may be formed.MATERIALS AND CONDITIONS TO AVOID: Strong acids, strong alkalis, strong oxidizers.

## Section VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Remove all sources of ignition. Avoid breathing vapors. Ventilate area. Remove with inert absorbent and non-sparking tools.WASTE DISPOSAL METHOD: Incinerate in approved facility. Do not incinerate closed containers. Dispose in accordance with local, state and federal regulations.

## Section VIII — SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Avoid breathing concentrated vapors or overspray particles if sprayed. In confined or poorly ventilated areas, use NIOSH approved mask with chemical canister or supplied air.VENTILATION: Provide general mechanical ventilation or local exhaust ventilation sufficient to keep concentration of solvent vapors below 50 PPMPROTECTIVE GLOVES: Use chemical resistant, impervious gloves for contact.EYE PROTECTION: Safety goggles or face shield where splashes can occur.OTHER PROTECTIVE EQUIPMENT:

## Section IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: ☒ FLAMMABLE ☐ COMBUSTIBLE

Keep in closed containers. Avoid sparks or flame when handling. Can be stored under ambient conditions. Keep closures tight and containers upright to prevent leakage.

OTHER PRECAUTIONS: Avoid contact with the skin. Use good personal hygiene practices. Wash hands thoroughly before eating/drinking/smoking/using toilet facilities.

Inhalation of formaldehyde has been shown to cause cancer in laboratory animals.

TRW-00979

# BOWMAN DISTRIBUTION MATERIAL SAFETY DATA SHEET

## SECTION I

PRODUCT NAME <b>ELECTRIC MOTOR &amp; CONTACT CLEANER</b>		BOWMAN PART NO. <b>21945</b> (page 1 of 2)
SUPPLIER <b>Bowman Distribution, Barnes Group Inc.</b>		EMERGENCY TELEPHONE NO. <b>(216) 391-7200</b>
ADDRESS <b>850 East 72nd Street, Cleveland, OH 44103</b>		DATE <b>1/25/88</b>
HAZARDOUS MATERIAL DESCRIPTION, PROPER SHIPPING NAME, HAZARD CLASS, HAZARD ID NO. (49 CFR 172.101) <b>Aerosol Spray Paint Consumer Commodity, ORM-D</b>		
ADDITIONAL HAZARD CLASSES (as applicable)		
CHEMICAL FAMILY <b>N.A.</b>	FORMULA <b>X5263</b>	

## SECTION II - HAZARDOUS INGREDIENTS

CAS REGISTRY NO.	%W	%V	CHEMICAL NAME(S)	TLV PPM	Mg/M <sup>3</sup>	Listed as a Carcinogen in NTP, IARC or OSHA 1910(z) (specify)
76-13-1	60		Trichlorotrifluoromethane	1000	7600	No
75-69-4	18-20		Trichlorofluoromethane	1000	5600	No
75-71-8	18-20		Dichlorodifluoromethane	1000	4950	No

## SECTION III - PHYSICAL DATA

BOILING POINT <u>118</u> °F <u>  </u> °C		SPECIFIC GRAVITY (H <sub>2</sub> O = 1)	<b>1.49</b>		
VAPOR PRESSURE <u>70.2</u> @ <u>  </u> °F <u>20</u> °C <input checked="" type="checkbox"/> mm Hg <input type="checkbox"/> psi		PERCENT VOLATILE BY VOLUME (%)	<b>100</b>	PERCENT SOLID BY WEIGHT (%)	<b>0</b>
VAPOR DENSITY (AIR = 1)	<b>N.A.</b>	EVAPORATION RATE ( = 1)	<b>N.A.</b>		
SOLUBILITY IN WATER	<b>N.A.</b>	pH =	<b>N.A.</b>		
APPEARANCE AND ODOR <b>Clear liquid, very slight solvent odor.</b>				MATERIAL IS: <b>LIQUID</b>	

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT <u>None</u> °F <u>  </u> °C	method used	FLAMMABLE LIMITS	LEL <b>N.A.</b>	UEL <b>N.A.</b>
EXTINGUISHING MEDIA <b>N.A.</b>				
SPECIAL FIRE FIGHTING PROCEDURES <b>Use self contained breathing apparatus. Keep cooling streams of water on exposed containers. Protect personnel from possible bursting containers.</b>				
UNUSUAL FIRE AND EXPLOSION HAZARDS <b>Exposure of aerosol containers to temperatures above 130°F may cause container to burst.</b>				

**21945** (page 1 of 2)

TRW-00980

0908-2348



## SECTION V - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE - Conditions to avoid <b>Acute drowsiness, loss of concentration.</b>	THRESHOLD LIMIT VALUE <b>See Section II</b>
CHRONIC: mild liver effects, prevention of weight gain. Conditions aggravated by exposure: liver, kidney, and heart ailments.	PERMISSIBLE EXPOSURE LIMIT
	OTHER LIMIT <b>N.A.</b>
PRIMARY ROUTES OF ENTRY Inhalation <input checked="" type="checkbox"/> Skin Contact <input type="checkbox"/> Other (specify)	
EMERGENCY AND FIRST AID PROCEDURES Remove patient to fresh air. Give artificial respiration if breathing has stopped. Eyes: flush with large amounts of water, lifting eyelids occasionally. Skin: wash with water.	

## SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	<b>X</b>	Will decompose at temperatures above 250° F.
INCOMPATIBILITY (materials to avoid) Hot reactive metal such as molten aluminum finely divided Barium.			
HAZARDOUS DECOMPOSITION PRODUCTS: Halogens, halogen acids, and carbonylhalides.			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	<b>X</b>	None

## SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Evacuate unprotected personnel, remove flame sources. Shut off leak.	
WASTE DISPOSAL METHOD Consult with appropriate regulatory agencies before discharging or disposing of waste material.	
CERCLA (Superfund) REPORTABLE QUANTITY (in lbs) <b>N.A.</b>	
RCRA HAZARDOUS WASTE NO. (40 CFR 261.33) <b>N.A.</b>	
VOLATILE ORGANIC COMPOUND (VOC) (as packaged, minus water)	<input checked="" type="checkbox"/> Theoretical <u>11</u> lb/gal
	<input type="checkbox"/> Analytical _____ lb/gal <b>N.A.</b> (see theoretical)

## SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type) Self contained breathing apparatus if over 1000 ppm TLV.		
VENTILATION	LOCAL EXHAUST (specify rate) Sufficient to maintain exposure below TLV(s).	SPECIAL <b>N.A.</b>
	MECHANICAL (general) (specify rate) In storage areas.	OTHER <b>N.A.</b>
PROTECTIVE GLOVES (specify type) Chemical resistant gloves, PVA, Viton		EYE PROTECTION (specify type) Safety goggles
OTHER PROTECTIVE EQUIPMENT <b>N.A.</b>		

## SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Avoid breathing vapor, liquid contact with eyes, skin, or clothing. Keep in cool, well ventilated area of low fire risk.	
OTHER PRECAUTIONS None	

# MATERIAL SAFETY DATA SHEET

The information contained within this bulletin is offered in good faith. The results obtained from laboratory and production are believed to be correct. All risks involved in using this product are assumed by the user. Alchem Corporation gives no warranty, expressed or implied, for the use thereof.



CHEMTREC EMERGENCY CONTACT 1 800 424-9200

**PRODUCT NAME**  
**ELECTROBRITE 502-A**

**ALCHEM CORPORATION**

525 W. LIBERTY STREET  
P.O. Box 1438  
MEDINA, OHIO 44256  
(216)725-2436

## HAZARDOUS INGREDIENTS

COMPONENT (CAS #)	OSHA PEL	ACGIH TLV	MAXIMUM PERCENT
ACETIC ACID 64-19-7	10 PPM	25 mg/m <sup>3</sup>	25
SODIUM BICARBONATE 10060-01-7	N/A	0.1 mg/m <sup>3</sup>	25
SULFURIC ACID 7764-93-9	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	10

## PHYSICAL/CHEMICAL CHARACTERISTICS

SPECIFIC GRAVITY: 1.30  
BOILING POINT: 220 F  
SOLUBILITY: Complete  
ODOR: Sharp  
APPEARANCE: Dark red liquid

## FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: N/A  
FLAMMABLE LIMITS: Non flammable  
EXTINGUISHING MEDIA: Water Spray Dry Chemical  
Carbon Dioxide

USE EXTINGUISHING MATERIAL SUITABLE FOR SURROUNDING FIRE

### SPECIAL FIRE FIGHTING PROCEDURES

This product is non-flammable. Cool fire-exposed containers with water spray. Exercise caution as steam-explosion may occur. Should container rupture, water runoff contains chromium VI and therefore should be contained according to the directives listed under Spills to be Taken for Spills. Always wear protective equipment and/or clothing when extinguishing fires.

### UNUSUAL FIRE AND EXPLOSIVE HAZARDS

Avoid toxic fumes that arise upon heat decomposition.

PREPARED SEPTEMBER 1, 1992 SUPERCEDES MARCH 20, 1991

THANK YOU FOR YOUR INTEREST IN ALCHEM PRODUCTS

71576

TRW-00982

0908-2350

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## REACTIVITY DATA

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DECOMPOSITION: Oxides of carbon  
POLYMERIZATION: Will not occur under normal conditions  
STABILITY: Stable

### MATERIALS TO AVOID:

This product is incompatible with cyanides. Keep away from all sources of contamination by insuring separate storage.

---

## HEALTH HAZARD DATA

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### SIGNS AND SYMPTOMS OF EXPOSURE

This material is a corrosive toxin. Burns on contact with all human tissues. It is an oral poison. **DO NOT SWALLOW!**

---

### EMERGENCY AND FIRST AID PROCEDURES

If in eyes: Flush with water for at least 15 minutes.  
If on skin: Wash area thoroughly with water, remove contaminated clothing.  
If inhaled: Remove person to fresh air.  
If swallowed: **POISON!** Give magnesia or whiteing suspended in water. Follow with an emetic.  
Always call physician when contact occurs.

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## PRECAUTIONS FOR SAFE HANDLING AND USE

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### STEPS TO BE TAKEN IN CASE OF SPILL

Wear respirator, cover spill with lime or soda ash, absorb liquid with floor compound and dispose.

---

### WASTE DISPOSAL PROCEDURE

Dispose of in accordance with Federal, State and Local Regulations. Contact the Regional Office of the Environmental Protection Agency or your local Alchem representative to determine specific disposal methods.

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### HANDLING AND STORING PRECAUTIONS

Consult Reactivity Data for incompatibles. Always keep container closed. Store in a cool, dry area. Keep from flame. Please handle with care.

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### OTHER PRECAUTIONS

This product is intended for industrial use only. Please handle with care.

**CONTROL MEASURES**

RESPIRATORY: Chrome cartridge  
VENTILATION: Local exhaust  
GLOVES: Impervious  
EYES: Face shield  
OTHER: Long sleeves, apron, boots

**REGULATORY INFORMATION****EMERGENCY PLANNING AND RIGHT-TO-KNOW (SARA TITLE III)****-Section 311/312 Categorizations (40CFR 370)**

This product poses an immediate(acute) health hazard. It may be classified as a corrosive as defined in 29CFR 1910.1200.

This product poses a delayed(chronic) health hazard. It is determined to be a carcinogen on at least one of the following lists: IARC, NTP, or OSHA.

**-Section 313 Information (40CFR 372)**

This product contains the following chemical(s) above de minimus concentration:

SULFURIC ACID 7764-93-9

SODIUM BICHROMATE 10588-01-9

**CERCLA INFORMATION (40CFR 302.4)**

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of hazardous substances greater than the reportable quantities.

There are no components present in this product at a level which would require reporting under this statute.

**RCRA INFORMATION**

When this product becomes a waste, it is considered hazardous. To determine treatment, contact your Alchem representative or regional EPA office.

**CHEMICAL CONTROL LAW STATUS**

All components of this product are listed or excluded from the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

**CANADIAN HMIS CONTROLLED PRODUCTS CLASSIFICATIONS**

Class: E Division:

HMIS	Health:	0	NFPA	Health:	3
	Flammability:	0		Flammability:	0
	Reactivity:	1		Reactivity:	1

note: HMIS and NFPA ratings involve data and interpretations that vary from company to company. These are intended only for rapid, general identification of the hazard.

**DOT: UN1760**

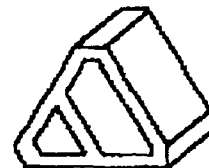
Corrosive, Liquid, n.o.s.

Corrosive

Contains Sodium Bichromate Sulfuric Acid

# MATERIAL SAFETY DATA SHEET

The information contained within this bulletin is offered in good faith. The results obtained from laboratory and production are believed to be correct. All risks involved in using this product are assumed by the user. Alchem Corporation gives no warranty, expressed or implied, for the use thereof.



CHENTREC EMERGENCY CONTACT 1-800-424-9300

## PRODUCT NAME

ELECTROBRITE #108 POWDER

## ALCHEM CORPORATION

525 W. LIBERTY STREET

P.O. Box 1438

MEDINA, OHIO 44256

(216)725-2436

## HAZARDOUS INGREDIENTS

COMPONENT (CAS #)	OSHA PEL	ACGIH TLV	MAXIMUM PERCENT
POTASSIUM BICHROMATE 7778-50-9	N/A	0.1 mg/m <sup>3</sup>	35
SODIUM FLOURIDE 7681-49-4	2.5 mg/m <sup>3</sup>	2.5 mg/m <sup>3</sup>	40

## PHYSICAL/CHEMICAL CHARACTERISTICS

SPECIFIC GRAVITY: N/A  
 BOILING POINT: N/A  
 SOLUBILITY: 600 g/l  
 ODOR: Sharp  
 APPEARANCE: Orange powder

## FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: N/A  
 FLAMMABLE LIMITS: Non flammable  
 EXTINGUISHING MEDIA: Water Spray Dry Chemical  
 Carbon Dioxide

USE EXTINGUISHING MATERIAL SUITABLE FOR SURROUNDING FIRE

### SPECIAL FIRE FIGHTING PROCEDURES

This product is non-flammable. Cool fire exposed containers with water spray. Exercise caution as steam explosion may occur. Should container rupture, water runoff contains chromium VI and therefore should be contained according to the directives listed under Steps to be Taken for Spills. Always wear protective equipment and/or clothing when extinguishing fires.

### UNUSUAL FIRE AND EXPLOSIVE HAZARDS

Avoid toxic fumes that arise upon heat decomposition.

TRW-00985

PREPARED SEPTEMBER 1, 1992 SUPERCEDES MARCH 20, 1991

THANK YOU FOR YOUR INTEREST IN ALCHEM PRODUCTS

71520

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## REACTIVITY DATA

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DECOMPOSITION: Oxides of carbon  
POLYMERIZATION: Will not occur under normal conditions  
STABILITY: Stable

### MATERIALS TO AVOID:

This product is incompatible with organics. Keep away from all sources of contamination by insuring separate storage

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## HEALTH HAZARD DATA

---

### SIGNS AND SYMPTOMS OF EXPOSURE

This material is an oxidizer. It may burn human tissue if it is not immediately washed off. This product may cause chronic health problems.

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### EMERGENCY AND FIRST AID PROCEDURES

If in eyes: Flush with water for at least 15 minutes.  
If on skin: Wash area thoroughly with water, remove contaminated clothing.  
If inhaled: Remove person to fresh air.  
If swallowed: POISON! Give magnesium or whiteing suspended in water. Follow with an emetic.  
Always call physician when contact occurs.

---

## PRECAUTIONS FOR SAFE HANDLING AND USE

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### STEPS TO BE TAKEN IN CASE OF SPILL

Sweep up spill and return to container. If material can not be reused, dispose of it.

---

### WASTE DISPOSAL PROCEDURE

Dispose of in accordance with Federal, State and Local Regulations. Contact the Regional Office of the Environmental Protection Agency or your local Alchem representative to determine specific disposal methods.

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### HANDLING AND STORING PRECAUTIONS

Consult Reactivity Data for incompatibles. Always keep container closed. Store in a cool, dry area. Keep from flame. Please handle with care.

---

### OTHER PRECAUTIONS

This product is intended for industrial use only. Please handle with care.

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## CONTROL MEASURES

RESPIRATORY	Unknown cartridge
VENTILATION	Local exhaust
GLOVES	Impervious
EYES	Face shield
OTHER	Long sleeves, apron, boots

## REGULATORY INFORMATION

### EMERGENCY PLANNING AND RIGHT-TO-KNOW (29CFR TITLE III)

#### -Section 311/312 Categorizations (40CFR 372)

This product poses an immediate(acute) health hazard. It may be classified as toxic as defined by 29CFR 1910.1200.

This product poses a delayed(chronic) health hazard. It is determined to be a carcinogen on at least one of the following lists: IARC, NTP, or OSHA

#### -Section 313 Information (40CFR 372)

This product contains the following chemical(s) above de minimus concentration:

POTASSIUM BICHROMATE 7778-50-9

### CERCLA INFORMATION (40CFR 302.4)

"Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of hazardous substances greater than the reportable quantities.

There are no components present in this product at a level which would require reporting under this statute

### RCRA INFORMATION

When this product becomes a waste, it is considered hazardous. To determine treatment, contact your Alchem representative or regional EPA office.

### CHEMICAL CONTROL LAW STATUS

All components of this product are listed or excluded from the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

### CANADIAN WHMIS CONTROLLED PRODUCTS CLASSIFICATIONS

Class: E Division:

HMIS	Health:	3	NFPA	Health:	3
	Flammability:	0		Flammability:	0
	Reactivity:	1		Reactivity:	1

note: HMIS and NFPA ratings involve data and interpretations that vary from company to company. These are intended only for rapid, general identification of the hazard.

DOT UN 1759  
Corrosive, Solid, n.o.s.  
Corrosive  
Contains: Potassium Bichromate and Sodium Fluoride

# MATERIAL SAFETY DATA SHEET CAT 47494

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I	
MANUFACTURER'S NAME <b>ELECTROCHEMICALS DIV. DART INDUSTRIES INC.</b>	EMERGENCY TELEPHONE NO. <b>216-746-0517</b>
ADDRESS (Number, Street, City, State, and ZIP Code) <b>751 Elm Street; Youngstown, Ohio 44502</b>	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS <b>Electro-Brite 502-A Liquid</b>
CHEMICAL FAMILY <b>N/A</b>	FORMULA <b>N/A</b>

SECTION II - HAZARDOUS INGREDIENTS					
PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OF CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)

SECTION III - PHYSICAL DATA			
BOILING POINT (°F.)	<b>120°F</b>	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	<b>Complete</b>		
APPEARANCE AND ODOR <b>Reddish yellow liquid with acetic acid odor.</b>			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA			
FLASH POINT (Method used) <b>approximately 104-c.c.</b>	FLAMMABLE LIMITS	LeI	UeI
EXTINGUISHING MEDIA <b>Carbon Dioxide - dry chemical</b>	<b>I. J. COSTELLO</b>		
SPECIAL FIRE FIGHTING PROCEDURES	<b>JUL 1 1973</b>		
UNUSUAL FIRE AND EXPLOSION HAZARDS <b>Moderate when exposed to heat or flame</b>			



SECTION V - HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE	26 mg per cubic meter of air
EFFECTS OF OVEREXPOSURE	can cause burns or skin irritation, ulcers
EMERGENCY AND FIRST AID PROCEDURES	
Wash with plenty of water and remove contaminated clothing, if swallowed give magnesia, chalk.	

SECTION VI - REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID Oxidizing or reducing agent
	STABLE	X	
INCOMPATIBILITY (Materials to avoid) Oxidizing or reducing agents.			
HAZARDOUS DECOMPOSITION PRODUCTS			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wash with water add sodium carbonate or dilute alkali.	
ASTE DISPOSAL METHOD Wash with plenty of water.	

SECTION VIII - SPECIAL PROTECTION INFORMATION			
RESPIRATORY PROTECTION (Specify type) - Recommended			
VENTILATION	LOCAL EXHAUST		SPECIAL
	MECHANICAL (General)		OTHER
PROTECTIVE GLOVES Yes		EYE PROTECTION Yes	
OTHER PROTECTIVE EQUIPMENT Protective clothing			

SECTION IX - SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Keep away from oxidizing or reducing agent.	
OTHER PRECAUTIONS Normal plating room handling techniques.	

# MATERIAL SAFETY DATA SHEET

The information contained within this bulletin is offered in good faith. The results obtained from laboratory and production are believed to be correct. All risks involved in using this product are assumed by the user. Alchem Corporation gives no warranty, expressed or implied, for the use thereof.



CHEMTREC EMERGENCY CONTACT 1-800-424-9300

## ALCHEM CORPORATION

### PRODUCT NAME

ELECTROBRITE 502-B

525 W. LIBERTY STREET  
P.O. Box 1438  
MEDINA, OHIO 44256  
(216)725-2436

## HAZARDOUS INGREDIENTS

COMPONENT (CAS #)	OSHA PEL	ACGIH TLV	MAXIMUM PERCENT
ACETIC ACID 64-19-7	10 PPM	25 mg/m3	2
SILVER NITRATE 776-1888	0.1 mg/m3	N/A	2

## PHYSICAL/CHEMICAL CHARACTERISTICS

SPECIFIC GRAVITY: 1.001  
BOILING POINT: 220 F  
SOLUBILITY: Complete  
ODOR: Acidic  
APPEARANCE: Purplish translucent liquid

## FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: N/A  
FLAMMABLE LIMITS: Non flammable  
EXTINGUISHING MEDIA: Water Spray Foam  
Carbon Dioxide Dry Chemical

USE EXTINGUISHING MATERIAL SUITABLE FOR SURROUNDING FIRE

### SPECIAL FIRE FIGHTING PROCEDURES

This product is non-flammable. The container, however, is Fiber drums burn and plastic containers melt. Should this vessel be exposed to flame, cool it with water spray. If contents are spilled due to fire, see section entitled Precautions for Safe Handling and Use under Steps to be Taken for Spills. Always wear protective equipment and/or clothing when extinguishing fires.

### UNUSUAL FIRE AND EXPLOSIVE HAZARDS

None

PREPARED SEPTEMBER 1, 1992 SUPERCEDES MARCH 20, 1991

THANK YOU FOR YOUR INTEREST IN ALCHEM PRODUCTS

71577

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## REACTIVITY DATA

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DECOMPOSITION: None  
POLYMERIZATION: Will not occur under normal conditions  
STABILITY: Stable

### MATERIALS TO AVOID

This product is incompatible with cyanides. Keep away from all sources of contamination by insuring separate storage

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## HEALTH HAZARD DATA

---

### SIGNS AND SYMPTOMS OF EXPOSURE

This material is irritating to human tissues. Contact with skin may cause itch discomfort and slight burning. Contact with eyes and mucous membranes may cause inflammation and burning/stinging sensations. Swallowing may cause slight nausea and headache. Avoid all contact by wearing protective equipment and clothing.

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### EMERGENCY AND FIRST AID PROCEDURES

If in eyes: Flush with water for at least 15 minutes.  
If on skin: Wash area thoroughly with water, remove contaminated clothing.  
If inhaled: Remove person to fresh air.  
If swallowed: Give large amounts of water. Do not induce vomiting.  
Always call physician when contact is made

---

## PRECAUTIONS FOR SAFE HANDLING AND USE

---

### STEPS TO BE TAKEN IN CASE OF SPILL

Neutralize with lime or soda ash, apply absorbent compound and dispose. Flush remaining area with water

---

### WASTE DISPOSAL PROCEDURE

Dispose of in accordance with Federal, State and Local Regulations. Contact the Regional Office of the Environmental Protection Agency or your local Alchem representative to determine specific disposal methods.

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### HANDLING AND STORING PRECAUTIONS

Consult Regulatory Data for incompatibles. Always keep container closed. Store in a cool, dry area. Keep from flame. Please handle with care.

---

### OTHER PRECAUTIONS

This product is intended for industrial use only. Please handle with extreme caution.

---

**CONTROL MEASURES**

---

RESPIRATORY: Pressure demand  
VENTILATION: Local exhaust  
GLOVES: Impervious  
EYES: Splash goggles  
OTHER: Long sleeves, boots

---

**REGULATORY INFORMATION**

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**EMERGENCY PLANNING AND RIGHT-TO-KNOW (SARA TITLE III)****-Section 311/312 Categorizations (40CFR 370)**

This product poses an immediate(acute) health hazard. It may be classified as an irritant as defined in 29CFR 1910.1200.

**-Section 313 Information (40CFR 372)**

This product contains the following chemical(s) above de minimus concentration:

SILVER NITRATE 776-1868

**CERCLA INFORMATION (40CFR 302.4)**

-Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of hazardous substances greater than the reportable quantities.

There are no components present in this product at a level which would require reporting under this statute.

**RCRA INFORMATION**

When this product becomes a waste, it is classified as a non-hazardous waste under the criteria of the Resource Conservation and Recovery Act (40CFR 261).

**CHEMICAL CONTROL LAW STATUS**

All components of this product are listed or excluded from the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

**CANADIAN WHMIS CONTROLLED PRODUCTS CLASSIFICATIONS**

Class: Division:

HMIS	Health:	1	NFPA	Health:	1
	Flammability:	0		Flammability:	0
	Reactivity:	0		Reactivity:	0

note: HMIS and NFPA ratings involve data and interpretations that vary from company to company. These are intended only for rapid, general identification of the hazard.

DOT NA 1693  
ORM-A, n.o.s.  
ORM-A  
Contains Silver Nitrate and Acetic Acid

## MATERIAL SAFETY DATA SHEET

CAT 47495

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

## SECTION I

MANUFACTURER'S NAME <b>ELECTROCHEMICALS DIV DART INDUSTRIES INC.</b>		EMERGENCY TELEPHONE NO. <b>216-746-0517</b>
ADDRESS (Number, Street, City, State, and ZIP Code) <b>751 Elm Street; Youngstown, Ohio 44502</b>		
CHEMICAL NAME AND SYNONYMS <b>N/A</b>		TRADE NAME AND SYNONYMS <b>Electro-Brite 502-B Liquid</b>
CHEMICAL FAMILY <b>N/A</b>	FORMULA	

## SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	190-220	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT. VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	Complete		
APPEARANCE AND ODOR	Clear liquid with vinegar odor.		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	Non-flammable	FLAMMABLE LIMITS	LeI	UeI
EXTINGUISHING MEDIA	N/A			
SPECIAL FIRE FIGHTING PROCEDURES	N/A	T. J. COSTELLO		
UNUSUAL FIRE AND EXPLOSION HAZARDS	None	JUL 1 1976 RECEIVED		

SECTION V - HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE	unknown
EFFECTS OF OVEREXPOSURE	readily reversible skin irritation
EMERGENCY AND FIRST AID PROCEDURES	wash with water, if swallowed induce vomiting

SECTION VI - REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID contact with reducing agents
	STABLE		
INCOMPATIBILITY (Materials to avoid)		reducing agent	
HAZARDOUS DECOMPOSITION PRODUCTS		None	
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Wash with water.
WASTE DISPOSAL METHOD	Wash with water.

SECTION VIII - SPECIAL PROTECTION INFORMATION			
RESPIRATORY PROTECTION (Specify type) Not normally required			
VENTILATION	LOCAL EXHAUST	SPECIAL	
	MECHANICAL (General)	OTHER	
PROTECTIVE GLOVES		EYE PROTECTION	
Yes		Yes	
OTHER PROTECTIVE EQUIPMENT			

SECTION IX - SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Keep away from reducing agent
OTHER PRECAUTIONS	Use typical plating room handling techniques.

MATERIAL SAFETY DATA SHEET

ELECTROCHEMICALS

751 Elm Street  
Youngstown, Ohio 44502  
216-746-0517

1. **PRODUCT NAME** ELECTRO-BRITE BRASS STABILIZER<sup>1</sup>

2. **PHYSICAL AND CHEMICAL CHARACTERISTICS**

Boiling Point: 220°F Specific Gravity: 1.04

Vapor Pressure: unknown mm Hg at           

Stable: XX Yes        No Solubility in Water: 100%

Flammable:        Yes XX No Flash Point: N.A.

Extinguisher Media: N.A.

Special Fire Fighting Procedures: N.A.

Appearance and Odor: Clear to pale yellow, odorless liquid.

3. **PHYSICAL HAZARDS**

<u>Ingredient</u>	<u>CAS No.</u>	<u>Hazard Type</u>
-------------------	----------------	--------------------

None

4. **HEALTH HAZARDS**

<u>Ingredient</u>	<u>CAS No.</u>	<u>Hazard Type</u>	<u>Exposure Limit</u>
-------------------	----------------	--------------------	-----------------------

None

Ingredients listed as carcinogens or potential carcinogens

<u>Ingredient</u>	<u>CAS No.</u>	<u>Listed By:</u>	<u>NTP</u>	<u>IARC</u>	<u>OSHA</u>
-------------------	----------------	-------------------	------------	-------------	-------------

None

Primary Routes of Entry Skin and eye contact.

Signs and Symptoms of Exposure None reported.

PRODUCT NAME: ELECTRO-BRITE BRASS STABILIZER

5. EMERGENCY AND FIRST AID PROCEDURES:

Eye: Flush with water for 15 minutes and see physician.

Skin: Wash thoroughly with soap and water.

Inhalation: Remove person to fresh air.

Ingestion: If patient is conscious, dilute by drinking two glasses of water. Induce vomiting and obtain medical attention.

6. PRECAUTIONS FOR SAFE HANDLING:

Respiratory Protection (Type): No special requirements.

Ventilation: No special requirements.

Eye Protection: Goggles or face shield.

Protective Gloves: Rubber or vinyl.

Other Protective Equipment: Rubber apron.

Storage Precautions: Store in closed containers.

Hazardous Decomposition Products: None

Incompatibility With Other Materials: Acids, calcium or lead salts, silver nitrate and magnesium sulfate.

Steps To Be Taken In Case Of Spills Or Leaks: Flush with water to waste treatment system.

DATE OF PREPARATION OR REVISION: 1/7/86

This MSDS supersedes those dated N.A. or earlier for this product. Such sheets are now obsolete and should be destroyed.



# MATERIAL SAFETY DATA SHEET

## ELECTROCHEMICALS

751 Elm Street  
Youngstown, Ohio 44502  
216-746-0517

1.	<b>PRODUCT NAME</b> ELECTRO-BRITE BRASS WETTER															
2.	<b>PHYSICAL AND CHEMICAL CHARACTERISTICS</b>															
	Boiling Point: <u>213°F</u> Specific Gravity: <u>1.001</u> Vapor Pressure: <u>unknown</u> mm Hg at _____ Stable: <u>XX</u> Yes      _____ No      Solubility in Water: <u>100%</u> Flammable: _____ Yes <u>XX</u> No      Flash Point: <u>N.A.</u> Extinguisher Media: <u>N.A.</u> Special Fire Fighting Procedures: N.A.  Appearance and Odor: Clear yellow, odorless liquid.															
3.	<b>PHYSICAL HAZARDS</b>															
	<u>Ingredient</u>	<u>CAS No.</u>	<u>Hazard Type</u>													
	None															
4.	<b>HEALTH HAZARDS</b>															
	<u>Ingredient</u>	<u>CAS No.</u>	<u>Hazard Type</u>	<u>Exposure Limit</u>												
	None															
	Ingredients listed as carcinogens or potential carcinogens <table border="0"> <tr> <td><u>Ingredient</u></td> <td><u>CAS No.</u></td> <td><u>Listed By:</u></td> <td><u>NTP</u></td> <td><u>IARC</u></td> <td><u>OSHA</u></td> </tr> <tr> <td colspan="6">None</td> </tr> </table>				<u>Ingredient</u>	<u>CAS No.</u>	<u>Listed By:</u>	<u>NTP</u>	<u>IARC</u>	<u>OSHA</u>	None					
<u>Ingredient</u>	<u>CAS No.</u>	<u>Listed By:</u>	<u>NTP</u>	<u>IARC</u>	<u>OSHA</u>											
None																
	<u>Primary Routes of Entry</u> Skin and eye contact.															
	<u>Signs and Symptoms of Exposure</u> None reported.															

**PRODUCT NAME:** ELECTRO-BRITE BRASS WETTER

**5. EMERGENCY AND FIRST AID PROCEDURES:**

Eye: Flush with water for 15 minutes and see physician.

Skin: Wash thoroughly with soap and water.

Inhalation: Remove person to fresh air.

Ingestion: If patient is conscious, dilute by drinking two glasses of water. Induce vomiting and obtain medical attention.

**6. PRECAUTIONS FOR SAFE HANDLING:**

Respiratory Protection (Type): No special requirements.

Ventilation: No special requirements.

Eye Protection: Goggles or face shield.

Protective Gloves: Rubber or vinyl.

Other Protective Equipment: Rubber apron.

Storage Precautions: None

Hazardous Decomposition Products: None

Incompatibility With Other Materials: Strong acids and oxidizers.

Steps To Be Taken In Case Of Spills Or Leaks: Absorb with floor sweeping compound. Dispose of solid waste in accordance with local regulations.

DATE OF PREPARATION OR REVISION: 1/7/86

This MSDS supersedes those dated N.A. or earlier for this product. Such sheets are now obsolete and should be destroyed.

# MATERIAL SAFETY DATA SHEET

**ELECTROCHEMICALS**  
751 Elm Street  
Youngstown, Ohio 44502  
216-746-0517

1. <b>PRODUCT NAME</b> Electro-Brite Level Best L-101B															
2. <b>PHYSICAL AND CHEMICAL CHARACTERISTICS</b>															
Boiling Point: <u>212°F</u> Specific Gravity: <u>1.025</u> Vapor Pressure: <u>Unknown</u> mm Hg at _____ Stable: <u>XX</u> Yes        _____ No                      Solubility in Water: <u>100%</u> Flammable: _____ Yes <u>XX</u> No                      Flash Point: <u>N.A.</u> Extinguisher Media: <u>N.A.</u> Special Fire Fighting Procedures: N.A.  Appearance and Odor: Colorless liquid odorless															
3. <b>PHYSICAL HAZARDS</b>															
<u>Ingredient</u>	<u>CAS No.</u>	<u>Hazard Type</u>													
None															
4. <b>HEALTH HAZARDS</b>															
<u>Ingredient</u>	<u>CAS No.</u>	<u>Hazard Type</u>	<u>Exposure Limit</u>												
None															
Ingredients listed as carcinogens or potential carcinogens <table style="width: 100%; border: none;"> <tr> <td style="width: 33%; text-align: center; padding: 5px;"><u>Ingredient</u></td> <td style="width: 16.5%; text-align: center; padding: 5px;"><u>CAS No.</u></td> <td style="width: 16.5%; text-align: center; padding: 5px;"><u>Listed By:</u></td> <td style="width: 16.5%; text-align: center; padding: 5px;"><u>NTP</u></td> <td style="width: 16.5%; text-align: center; padding: 5px;"><u>IARC</u></td> <td style="width: 16.5%; text-align: center; padding: 5px;"><u>OSHA</u></td> </tr> <tr> <td style="text-align: center; padding: 5px;">None</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>				<u>Ingredient</u>	<u>CAS No.</u>	<u>Listed By:</u>	<u>NTP</u>	<u>IARC</u>	<u>OSHA</u>	None					
<u>Ingredient</u>	<u>CAS No.</u>	<u>Listed By:</u>	<u>NTP</u>	<u>IARC</u>	<u>OSHA</u>										
None															
<u>Primary Routes of Entry</u> Skin and eye contact; inhalation  <u>Signs and Symptoms of Exposure</u> Prolonged exposure can cause slight irritation of eyes, skin, and mucous membranes.															

PRODUCT NAME: Electro-Brite Level Best L-101B

5. **EMERGENCY AND FIRST AID PROCEDURES:**

Eye: Flush with water for 15 minutes and contact physician.

Skin: Flush with water and remove contaminated clothing.  
Contact physician in event of irritation.

Inhalation: Remove person to fresh air. Contact physician in event of irritation of throat or nose.

Ingestion: If patient is conscious, dilute by drinking two glasses of water. Induce vomiting and obtain immediate medical attention.

6. **PRECAUTIONS FOR SAFE HANDLING:**

Respiratory Protection (Type): Not normally required.

Ventilation: No special requirements.

Eye Protection: Splash goggles or face shield.

Protective Gloves: Rubber or vinyl.

Other Protective Equipment: Rubber apron.

Storage Precautions: No special requirements.

Hazardous Decomposition Products: None.

Incompatibility With Other Materials: None reported.

Steps To Be Taken In Case Of Spills Or Leaks: Flush with water to waste treatment system.

DATE OF PREPARATION OR REVISION: July 18, 1985

This MSDS supersedes those dated N.A. or earlier for this product. Such sheets are now obsolete and should be destroyed.

# MATERIAL SAFETY DATA SHEET

## ELECTROCHEMICALS

751 Elm Street  
Youngstown, Ohio 44502  
216-746-0517

1. **PRODUCT NAME** ELECTRO-BRITE BRASS BRIGHTENER

2. **PHYSICAL AND CHEMICAL CHARACTERISTICS**

Boiling Point: 220°F Specific Gravity: 1.006  
Vapor Pressure: unknown mm Hg at \_\_\_\_\_  
Stable: XX Yes \_\_\_\_\_ No Solubility in Water: 100%  
Flammable: \_\_\_\_\_ Yes XX No Flash Point: N.A.  
Extinguisher Media: N.A.  
Special Fire Fighting Procedures: N.A.

Appearance and Odor: Amber colored liquid with slight almond odor.

3. **PHYSICAL HAZARDS**

<u>Ingredient</u>	<u>CAS No.</u>	<u>Hazard Type</u>
None		

4. **HEALTH HAZARDS**

<u>Ingredient</u>	<u>CAS No.</u>	<u>Hazard Type</u>	<u>Exposure Limit</u>
Sodium Cyanide	143-33-9	Highly toxic	5 mg (CN)/m <sup>3</sup> (TWA)

Ingredients listed as carcinogens or potential carcinogens

<u>Ingredient</u>	<u>CAS No.</u>	<u>Listed By:</u>	<u>NTP</u>	<u>IARC</u>	<u>OSHA</u>
None					

Primary Routes of Entry Skin and eye contact; inhalation of vapor and mist.

Signs and Symptoms of Exposure Prolonged exposure may cause fatigue and weakness as well as skin and eye irritation. Ingestion of sufficient quantity may be fatal.

PRODUCT NAME: ELECTRO-BRITE BRASS BRIGHTENER

5. EMERGENCY AND FIRST AID PROCEDURES:

Eye: Flush with water for 15 minutes and see physician.

Skin: Flush with water and remove contaminated clothing. Contact physician in event of irritation.

Inhalation: Remove person to fresh air. Contact physician in event of irritation of throat or nose.

Ingestion: If patient is conscious, dilute by drinking two glasses of water. Induce vomiting and obtain immediate medical attention.

6. PRECAUTIONS FOR SAFE HANDLING:

Respiratory Protection (Type): Respirator approved for cyanide.

Ventilation: Local exhaust.

Eye Protection: Goggles or face shield.

Protective Gloves: Rubber or vinyl.

Other Protective Equipment: Rubber apron and boots.

Storage Precautions: Avoid contact. Keep container tightly closed. Store away from acids and oxidizers. Keep solution alkaline. Avoid exposure to heat and steam.

Hazardous Decomposition Products: Reacts with acid to release poisonous hydrogen cyanide gas.

Incompatibility With Other Materials: Acids and oxidizers.

Steps To Be Taken In Case Of Spills Or Leaks: Wear respirator. Keep solution alkaline by covering spill with solid lime or soda ash. Absorb liquid with floor sweeping compound. Sweep up and store in tightly closed containers for disposal in accordance with local regulations for cyanide compounds. Decontaminate area with hypochlorite solution to oxidize residual cyanide.

DATE OF PREPARATION OR REVISION: 1/7/86

This MSDS supersedes those dated N.A. or earlier for this product. Such sheets are now obsolete and should be destroyed.

## ELECTROCHEMICALS

718.

## 2. PHYSICAL AND CHEMICAL CHARACTERISTICS

Appearance and Odor: White powder

### 3. HAZARDOUS INGREDIENTS

### Ingredient

CAS No.	Wt. %
108-90-7	100

Hazard Type

### Exposure Limit

This product contains no ingredients that are hazardous as defined by 29 CFR 1910.1200. However, it is still good practice to avoid excessive body contact and to rinse all spills immediately with water.

Ingredients listed as carcinogens or potential carcinogens

NTP

IARC

OSHA

Primary Routes of Entry:

**Skin and eye contact.**

### Signs and Symptoms of Exposure:

Prolonged exposure may cause slight irritation of skin, eyes, and mucous membranes.

**EMERGENCY AND FIRST AID PROCEDURES**

**EYES:** Flush with water for 15 minutes and see physician.

**SKIN:** Flush with water and remove contaminated clothing.  
Contact physician in event of irritation.

**INHALATION:** Remove person to fresh air. Contact physician  
in event of irritation of throat or nose.

**INGESTION:** If patient is conscious, dilute by drinking two  
glasses of water. Induce vomiting and obtain immediate  
medical attention.

**5. PRECAUTIONS FOR SAFE HANDLING**

**Respiratory Protection (Type):**  
Not normally required.

**Ventilation:**  
No special requirements

**Eye Protection:**  
Splash goggles or face shield.

**Protective Gloves:**  
Rubber or vinyl

**Other Protective Equipment:**  
Rubber apron

**Storage Precautions:**  
No special requirements

**Hazardous Decomposition Products:**  
Heating to dryness may release oxides of carbon and silicon.

**Incompatibility With Other Materials:**  
Oxidizing agents.

**Steps to be Taken in Case of Spills or Leaks:**  
Flush with water to waste treatment system.

**DATE OF PREPARATION OR REVISION:** Dec. 1, 1988

This MSDS supersedes those dated May 30, 1985 or earlier for this  
product. Such sheets are now obsolete and should be removed from your file.



PRODUCT NAME: ELECTRO-BRITE NO FLASH POWDER

## EMERGENCY AND FIRST AID PROCEDURES

EYES: Flush with water for 15 minutes and see physician.

SKIN: Flush with water and remove contaminated clothing.  
Contact physician in event of irritation.

INHALATION: Remove person to fresh air. Contact physician  
in event of irritation of throat or nose.

INGESTION: If patient is conscious, dilute by drinking two  
glasses of water. Induce vomiting and obtain immediate  
medical attention.

## 5. PRECAUTIONS FOR SAFE HANDLING

Respiratory Protection (Type):  
Not normally required.

Ventilation:  
No special requirements

Eye Protection:  
Splash goggles or face shield.

Protective Gloves:  
Rubber or vinyl

Other Protective Equipment:  
Rubber apron

Storage Precautions:  
No special requirements

Hazardous Decomposition Products:  
Heating to dryness may release oxides of carbon and silicon.

Incompatibility With Other Materials:  
Oxidizing agents.

Steps to be Taken in Case of Spills or Leaks:  
Flush with water to waste treatment system.

DATE OF PREPARATION OR REVISION: Dec. 1, 1988

This MSDS supersedes those dated May 30, 1985 or earlier for this  
product. Such sheets are now obsolete and should be removed from your file.

751 Elm Street  
Youngstown, Ohio 44502  
216-746-0517

## 2. PHYSICAL AND CHEMICAL CHARACTERISTICS

Boiling Point: N.A. Specific Gravity: N.A.  
Vapor Pressure: N.A. mm Hg at  
Stable: yes Solubility in water: limited  
Flash Point: N.A. Flammable: no Combustible: no  
Extinguisher Media: N.A.  
Special Fire Fighting Procedures: N.A.  
Appearance and Odor: White powder

Ingredient	CAS No.	Wt. %	Hazard	Type	Exposure Limit
------------	---------	-------	--------	------	----------------

This product contains no ingredients that are hazardous as defined by 29 CFR 1910.1200. However, it is still good practice to avoid excessive body contact and to rinse all spills immediately with water.

**Ingredients listed as carcinogens or potential carcinogens**

Ingredients	NTP	IARC	OSHA
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**Primary Routes of Entry:**

**Skin and eye contact.**

### Signs and Symptoms of Exposure:

Prolonged exposure may cause slight irritation of skin, eyes, and mucous membranes.



## MATERIAL SAFETY DATA SHEET

**CST / ALCHEM** CORPORATION  
 525 W. LIBERTY ST. Avenue  
 MEDINA, OHIO 44256 44114

24-Hour Emergency Number  
 CHEMTREC 800-424-9300

1. PRODUCT NAME: ELECTRO-BRITE Z-200 POWDER

2. PHYSICAL AND CHEMICAL CHARACTERISTICS

Boiling Point: N.A. Specific Gravity: N.A.  
 Vapor Pressure: N.A. mm Hg at  
 Stable: yes Solubility in water: 6 oz/gal  
 Flash Point: N.A. Flammable: no Combustible: no  
 Extinguisher Media: N.A.  
 Special Fire Fighting Procedures: Use water only on nearby fires.  
 Appearance and Odor: Red powder

3. HAZARDOUS INGREDIENTS

Ingredient	CAS No.	Wt. %	Hazard Type	Exposure Limit
Chronic acid	1333-82-0	90-99	Oxidizer, Corrosive, Carcinogen	0.05 mg Cr/m <sup>3</sup> (TMA)

This product contains one or more substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372. These substances and their concentrations are listed above.

Ingredients listed as carcinogens or potential carcinogens

Ingredients	NTP	IARC	OSHA
Chronic acid	no	yes	no

Primary Routes of Entry:

Skin and eye contact; inhalation of vapor and mist.

Signs and Symptoms of Exposure:

Skin irritation, rash and burns are possible upon exposure. Chromium compounds have been reported to cause cancer in animals.

PRODUCT NAME: ELECTRO-BRITE Z-200 POWDER

#### EMERGENCY AND FIRST AID PROCEDURES

**EYES:** Flush with water for 15 minutes and see physician.

**SKIN:** Flush with water and remove contaminated clothing.  
Contact physician in event of irritation.

**INHALATION:** Remove person to fresh air. Contact physician  
in event of irritation of throat or nose.

**INGESTION:** If patient is conscious, dilute by drinking two  
glasses of water. DO NOT induce vomiting. Obtain immediate  
medical attention.

#### 5. PRECAUTIONS FOR SAFE HANDLING

**Respiratory Protection (Type):**  
Canister type recommended.

**Ventilation:**  
Normally required with and use

**Eye Protection:**  
Splash goggles or face shield.

**Protective Gloves:**  
Rubber or vinyl

**Other Protective Equipment:**  
Rubber apron

**Storage Precautions:**  
Store in cool, dry area away from oxidizable materials

**Hazardous Decomposition Products:**  
None reported.

**Incompatibility With Other Materials:**  
Organic and oxidizable materials.

**Steps to be Taken in Case of Spills or Leaks:**  
Shovel solids into suitable container for subsequent  
disposal. Flush remaining material with water and  
neutralize with lime or soda ash prior to waste  
treatment of hexavalent chromium.

DATE OF PREPARATION OR REVISION: May 11, 1989

This MSDS supersedes those dated Dec. 1, 1988 or earlier for this  
product. Such sheets are now obsolete and should be removed from your file.



**McGean-Rohco, Inc.**

1250 Terminal Tower, Cleveland, Ohio 44113 216/621-6425

#12110

# MATERIAL SAFETY DATA SHEET

Product Name:	EM-1 ETCHANT	Emergency Phone No.:	216/441/4900
Plant Address:	2910 Harvard Avenue	Cleveland, OH 44109	Chemtec Phone No. 800/424-9300
Prepared By:	TSCA Coordinator	Issue Date:	8/80
		Revised Date:	3rd 10/87

## INGREDIENTS AND HAZARDOUS COMPONENTS

Material	%	TLV	C.A.S. #	Subst. Coverage
Chromium Trioxide	>90	0.1	1333-82-0	Yes
		mg/m <sup>3</sup>		

## PHYSICAL DATA

Boiling Point:	NA	Freezing Point:	NA	Specific Gravity:	Approximately 2.7	pH:	NA
Vapor Pressure at 20° C:	NA	Vapor Density (Air = 1):	NA	% Volatiles by Volume:	NA	Odor:	None
Evaporation Rate (Butyl Acetate = 1)	NA	Solubility in Water:	Appreciable				
Appearance and Form:	Dark red flakes or powder.						

## FIRE AND EXPLOSION HAZARD DATA

Flash Point:	NA	Flammable Limits in Air:	
Test Method:	NA	% By Volume	Upper: NA Lower:
Extinguishing Media:	NA		
Special Fire Fighting Procedures:	Self-contained breathing apparatus should be worn in areas where chromic acid is stored.		
Unusual Fire and Explosion Hazards:	Powerful oxidizing agent. May react with oxidizable substances rapidly enough to ignite them.		
DOT Classification:	Oxidizer, Corrosive	NA-1463	Note: UK = Unknown NA = Not Applicable

TRW-01009

0908-2377

## HEALTH HAZARD DATA

Effects of Overexposure and Primary Entry to Body: Primary entry through skin and inhalation of dust. Ulceration of mucous membranes of nose and mouth, nasal "holes" severe irritation of nose, throat, bronchial tubes, and lungs. Burns to skin and eyes and external ulcers. Toxic - Liver and Kidney damage.

Emergency and First Aid Procedures: Flush skin and eyes with water for at least 15 minutes. Get medical attention. If inhaled, irrigate nasal passages and mouth with water. If swallowed and conscious, give water and induce vomiting. Get medical attention.

## REACTIVITY DATA

☒ Stable ☐ Unstable Conditions to Avoid:

Incompatibility — Materials to Avoid:

Any combustible organic or other readily oxidizable materials such as paper, wood, sulfur, aluminum, etc.

Hazardous Decomposition Products:

None known.

Hazardous Polymerization:

☐ May Occur ☒ Will Not Occur

## SPILL OR LEAK PROCEDURES

Spills:

Collect spilled material in the most convenient and safe manner for reclamation or disposal. Treat residue with a reducing agent such as sodium sulfite. Neutralize with soda ash or lime. Absorb and place in suitable containers for proper disposal.

Waste Disposal Methods:

Reduce to  $\text{Cr}^{+3}$  with sodium sulfite or ferrous sulfate.  
Precipitate  $\text{Cr}^{+3}$  in solution by neutralizing to pH 7.5 with soda ash or lime.  
Reclaim or dispose of precipitate in an EPA approved landfill.

## SPECIAL PROTECTION INFORMATION

Respirator: Use only NIOSH/MSHA approved respirators.  
Follow mfg. recommendations where dust, mists, fumes or vapors may be generated.

Ventilation: Sufficient to keep below TLV limits.

Gloves:  
Rubber

Eye and Face:  
Chemical goggles and face shield

Other:  
Sufficient to prevent skin contact.

Handling and Storage:

Store in a clean, cool, dry, well-ventilated area.  
Keep away from oxidizable materials.  
Avoid dusting and skin and eye contact.

THIS PRODUCT SAFETY DATA SHEET IS OFFERED SOLELY FOR YOUR INFORMATION, CONSIDERATION AND INVESTIGATION.

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Page - 1  
Customer Number : 84000

ACHESON COLLOIDS COMPANY  
NO-CHARGE

Date - 6/29/87  
SHIPPER NUMBER : 38541

MATERIAL SAFETY DATA SHEET

\* REVISION NO. : 001

REVISION DATE : 10/07/86 \*

SECTION I - SOURCE AND NOMENCLATURE

Manufacturer's Name  
ACHESON COLLOIDS COMPANY

Emergency Telephone No.  
313-984-5581

Address  
PO Box 288, Port Huron, MI 48060

Chemical Family  
PTFE/Resin in Solvents  
Chemical Name and Synonyms  
Mixture

Trade Name and Synonyms  
EMRALON 305HS

SECTION II - OSHA REGULATED INGREDIENTS

<u>Basic Material</u>	<u>Approximate Wt. %</u>	<u>Exposure Limit</u>
Methyl Ethyl Ketone	29.00	200.00 Ppm
Ethanol	27.00	1000.00 Ppm
Carbon Black	4.00	3.50 Mg/m3
Formaldehyde	3.00	3.00 Ppm
Xylene	3.00	100.00 Ppm
Chromium	1.00	.05 Mg/m3

SECTION III - PHYSICAL DATA

<u>Boiling Point</u>	N/A	<u>Vapor Pressure</u>	N/A	<u>Vapor Density</u>	N/A
<u>Melting Point</u>	N/A	<u>Evaporation Rate</u>	N/A	<u>Volatile</u>	55.0
<u>Specific Gravity</u>	1.04	<u>Solubility in Water :</u>	Nil		

Appearance/Odor  
Black Fluid; Sharp Fruity Odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

<u>Flash Point</u>	34 F	<u>FLAMMABLE (EXPLOSIVE) LIMITS</u>	<u>Upper</u>	N/A
			<u>Lower</u>	N/A

Method  
T. C. C.

Extinguishing Media  
FOAM, CARBON DIOXIDE, DRY CHEMICAL.

Special Fire Fighting Procedures  
SELF-CONTAINED BREATHING SUPPLY.

Unusual Fire and Explosion Hazards  
KEEP AWAY FROM SPARKS, OPEN FLAMES, OR OTHER SOURCES OF IGNITION.

SECTION V - HEALTH HAZARD DATA

Effects of Overexposure

Inhalation  
REPEATED INHALATION OF CONCENTRATION ABOVE PERMISSIBLE EXPOSURE LIMITS MAY RESULT IN SEVERE OR PERMANENT TOXIC EFFECTS.

Ingestion  
MAY RESULT IN SEVERE OR PERMANENT TOXIC EFFECTS.

Eye  
MAY CAUSE SEVERE IRRITATION, BURNING SENSATION, BLURRED VISION.

Skin  
REPEATED OR PROLONGED CONTACT CAN CAUSE IRRITATION AND DERMATITIS.

Emergency and First Aid Procedures

Inhalation

IF AFFECTED, REMOVE INDIVIDUAL TO FRESH AIR; IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN; IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION AND SEEK MEDICAL ATTENTION IMMEDIATELY.

Ingestion

KEEP INDIVIDUAL CALM AND SEEK MEDICAL ATTENTION IMMEDIATELY.

Eye

FLUSH EYES WITH WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY AND SEEK MEDICAL ATTENTION IMMEDIATELY.

Skin

WASH WITH SOAP AND WATER; REMOVE CONTAMINATED CLOTHING AND LAUNDRER BEFORE REUSE.

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SECTION VI - REACTIVITY DATA

---

Conditions Contributing to Instability

STABLE.

Conditions Contributing to Hazardous Polymerization

NONE.

Incompatibility (MATERIALS TO AVOID)

STRONG OXIDIZERS.

Hazardous Decomposition of Products

CO, CO2.

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SECTION VII - SPILL OR LEAK PROCEDURES

---

Steps to be Taken in Case Material is Released or Spilled

REMOVE ALL SOURCES OF IGNITION AND VENTILATE AREA; APPLY ABSORBENT MATERIAL AND TRANSFER TO CONTAINERS.

Waste Disposal Method

CONSULT WITH FEDERAL, STATE AND LOCAL WASTE REGULATIONS.

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SECTION VIII - SPECIAL PROTECTION INFORMATION

---

Ventilation Requirements

PROVIDE SUFFICIENT LOCAL EXHAUST VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

Protective Equipment:

Eye

WEAR CHEMICAL SPLASH GOGGLES.

Glove

WEAR SOLVENT RESISTANT GLOVES.

Respirator

IN AREA WHERE THE TLV OF THIS PRODUCT IS EXCEEDED, AIR SUPPLIED BREATHING EQUIPMENT IS REQUIRED.

Other

WEAR PROTECTIVE CLOTHING TO PREVENT SKIN CONTACT.

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SECTION IX - SPECIAL PRECAUTIONS

---

Precautions to be Taken in Handling and Storage

THIS PRODUCT CONTAINS SUSPECTED CANCER AGENT. AVOID EXPOSURE ABOVE TLV LIMIT.

These data are offered in good faith as typical values and not as a product specification. No warranty, either expressed or implied, is hereby made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate.



Customer Number : 84000

NO-CHARGE

SHIPPER NUMBER : 38541

## MATERIAL SAFETY DATA SHEET

\* REVISION NO. : 001

REVISION DATE : 4/02/86 \*

## SECTION I - SOURCE AND NOMENCLATURE

Manufacturer's Name

ACHESON COLLOIDS COMPANY

Emergency Telephone No.

313-984-5581

Address

PO Box 288, Port Huron, MI 48060

Chemical Family

PTFE/Solvent

Trade Name and Synonyms

EMRALON 333

Chemical Name and Synonyms

PTFE in Solvent

## SECTION II - OSHA REGULATED INGREDIENTS

<u>Basic Material</u>	Approximate	Exposure
	Wt. %	Limit
N-Methylpyrrolidone	43.00	200.00 Ppm
Propylene Glycol Methyl Ether Acetate	29.00	100.00 Ppm
Carbon Black	1.00	3.50 Mg/M3

## SECTION III - PHYSICAL DATA

Boiling Point	N/A	Vapor Pressure	N/A	Vapor Density	N/A
Melting Point	N/A	Evaporation Rate	N/A	Volatile	72.0
Specific Gravity	1.12	Solubility in Water :	Nil		
<u>Appearance/Odor</u>					
Black Fluid, Mild Odor					

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point	144 F	FLAMMABLE (EXPLOSIVE) LIMITS	Upper	N/A
			Lower	N/A

Method

Tag Closed Cup

Extinguishing Media

FOAM, CARBON DIOXIDE, DRY CHEMICAL.

Special Fire Fighting Procedures

SELF-CONTAINED BREATHING SUPPLY.

Unusual Fire and Explosion Hazards

KEEP AWAY FROM SPARKS, OPEN FLAMES OR OTHER SOURCES OF IGNITION.

## SECTION V - HEALTH HAZARD DATA

Effects of OverexposureInhalation

EXCESSIVE INHALATION OF VAPORS OR MISTS CAN CAUSE NASAL AND RESPIRATORY IRRITATION, DIZZINESS, NAUSEA, HEADACHE.

Ingestion

CAN CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITING, AND DIARRHEA.

Eye

MAY CAUSE SEVERE IRRITATION, BURNING SENSATION, BLURRED VISION.

Skin

REPEATED OR PROLONGED CONTACT CAN CAUSE IRRITATION AND DERMATITIS.

Emergency and First Aid Procedures

Inhalation

IF AFFECTED, REMOVE INDIVIDUAL TO FRESH AIR; IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN; IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION AND SEEK MEDICAL ATTENTION IMMEDIATELY.

Ingestion

KEEP INDIVIDUAL CALM AND SEEK MEDICAL ATTENTION IMMEDIATELY.

Eye

FLUSH EYES WITH WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY, AND SEEK MEDICAL ATTENTION IMMEDIATELY.

Skin

WASH WITH SOAP AND WATER REMOVE CONTAMINATED CLOTHING AND LAUNDRY BEFORE REUSE.

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SECTION VI - REACTIVITY DATA

---

Conditions Contributing to Instability

STABLE.

Conditions Contributing to Hazardous Polymerization

NONE.

Incompatibility (MATERIALS TO AVOID)

STRONG OXIDIZERS.

Hazardous Decomposition of Products

PERFLUOROCARBON COMPOUNDS.

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SECTION VII - SPILL OR LEAK PROCEDURES

---

Steps to be Taken in Case Material is Released or Spilled

REMOVE ALL SOURCES OF IGNITION AND VENTILATE AREA; APPLY ABSORBENT MATERIAL AND TRANSFER TO CONTAINERS.

Waste Disposal Method

CONSULT WITH FEDERAL, STATE AND LOCAL WASTE REGULATIONS.

---

SECTION VIII - SPECIAL PROTECTION INFORMATION

---

Ventilation Requirements

PROVIDE SUFFICIENT LOCAL EXHAUST VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

Protective Equipment:

Eye

WEAR CHEMICAL SPLASH GOGGLES.

Glove

WEAR SOLVENT RESISTANT GLOVES.

Respirator

IF THE TLV OF THE PRODUCT IS EXCEEDED, A MECHANICAL OR SELF-CONTAINED BREATHING APPARATUS IS ADVISED.

Other

NO SPECIAL EQUIPMENT DEEMED NECESSARY UNDER NORMAL USAGE.

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SECTION IX - SPECIAL PRECAUTIONS

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Precautions to be Taken in Handling and Storage

AVOID CONTAMINATION OF CIGARETTE OR OTHER SMOKING MATERIAL.

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DEPT. 217

**MATERIAL SAFETY DATA SHEET**  
**FOR COATINGS, RESINS AND RELATED MATERIALS**

DATE OF PREP.

PRODUCT 4292 SERIES

## Section I

MANUFACTURER'S NAME RAFFI AND SWANSON, INC.

STREET ADDRESS 100 Eames Street

CITY, STATE, AND ZIP CODE Wilmington, Mass. 01887

EMERGENCY TELEPHONE NO. 617-933-4200

MANUFACTURER'S CODE IDENTIFICATION

PRODUCT CLASS Solvent Based Compound

4292 Enamel - Various Colors

TRADE NAME N/A

Information on the composition of Raffi and Swanson, Inc. products is confidential proprietary information and is provided solely to aid in safe handling of these materials. Use or disclosure for any other purpose is expressly forbidden.

## Section II — HAZARDOUS INGREDIENTS

INGREDIENT	PERCENT	TLV		LEL	VAPOR PRESSURE
		PPM	mg/M <sup>3</sup>		
Xylene	55 ± 5	100		1%	Less than 10 mm Hg
n-Butanol	10 ± 5	100		1.4%	4.3

## Section III — PHYSICAL DATA

BOILING RANGE 243-291°F.

VAPOR DENSITY ☒ HEAVIER ☐ LIGHTER, THAN AIREVAPORATION RATE ☐ FASTER ☒ SLOWER, THAN ETHER

PERCENT VOLATILE BY VOLUME

65 ± 5

WEIGHT PER GALLON

8.0 to 10.0 lb.

## Section IV — FIRE AND EXPLOSION HAZARD DATA

DOT CATEGORY

Not regulated combustible greater than 80°F.

FLASH POINT

81°F. lowest flashing component

LEL 1%

EXTINGUISHING MEDIA

Carbon Dioxide, Dry Chemical or Foam.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Keep containers tightly closed. Isolate from heat, sparks and open flame. Do not apply to hot surfaces. Closed containers may explode when exposed to extreme heat.

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective. Water may be used to cool closed containers.

TRW-01015

## Section V — HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE See Section II

EFFECT OF OVEREXPOSURE

**INHALATION:** Vapor irritating to eyes, nose, and throat. Can cause headache, dizziness, nausea, weakness, loss of consciousness.

**EYE CONTACT:** Burning and irritation.

EMERGENCY AND FIRST AID PROCEDURES

**INHALATION:** Provide fresh air. Give artificial respiration or oxygen if necessary. Call physician.

**EYE CONTACT:** Lubricate eye with C. P. Castor Oil or wash with large amounts of water. SEE PHYSICIAN.

## Section VI — REACTIVITY DATA

STABILITY ☐ UNSTABLE ☒ STABLE

CONDITIONS TO AVOID

INCOMPATIBILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION ☐ MAY OCCUR ☒ WILL NOT OCCUR

CONDITIONS TO AVOID

## Section VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Avoid breathing vapors. Ventilate area. Remove with inert absorbent and non-marking tools.

**WASTE DISPOSAL METHOD:** Incinerate in approved facility. Solid residue to sanitary land fill. Dispose in accordance with local, state, and federal regulations. Do not incinerate closed containers.

## Section VIII — SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION

Avoid breathing concentrated vapors or overspray particles if sprayed. In confined or poorly ventilated areas, use Bureau of Mines approved mask with chemical canister or supplied air.

VENTILATION

Provide general mechanical ventilation or local exhaust ventilation sufficient to keep TLV of vapors below 100 PPM.

**PROTECTIVE GLOVES:** Use for prolonged or repeated contact.

**EYE PROTECTION:** Safety goggles or face shield where splashes can occur.

**OTHER PROTECTIVE EQUIPMENT:**

## Section IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

**FLAMMABLE.** Keep in closed containers. Avoid sparks or flame when handling. Can be stored under ambient conditions.

OTHER PRECAUTIONS

Avoid prolonged contact with the skin.

TRW-01016

U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

Form Approved  
OMB No. 44-81387

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

## SECTION I

MANUFACTURER'S NAME

Fiske Brothers Refining Co.

EMERGENCY TELEPHONE NO.

201-589-9150

ADDRESS (Number, Street, City, State, and ZIP Code)

129 Lockwood St., Newark, New Jersey 07105

CHEMICAL NAME AND SYNONYMS

Petroleum Distillate

TRADE NAME AND SYNONYMS

FISKE'S Evap Oil

CHEMICAL FAMILY

Saturated Hydrocarbons

FORMULA

Aliphatic Hydrocarbons

## SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS	100	500	FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Generally regarded as "non-irritating"				100	500

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	360-400	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	0.74-0.77
VAPOR PRESSURE (mm Hg.)	0.5 @ 68°F	PERCENT VOLATILE BY VOLUME (%)	100%
VAPOR DENSITY (AIR=1)	5.17	EVAPORATION RATE (Toluene =1)	0.03
SOLUBILITY IN WATER	Insoluble		
APPEARANCE AND ODOR	Clear, slight oily odor.		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	TCC 130°F.	FLAMMABLE LIMITS	LeI	UeI
			1.0%	6.0%
EXTINGUISHING MEDIA	Water spray, CO <sub>2</sub> , foam, dry chemical.			
SPECIAL FIRE FIGHTING PROCEDURES	As with mineral oils			
UNUSUAL FIRE AND EXPLOSION HAZARDS	As with mineral oils.			

SECTION V - HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE	500
EFFECTS OF OVEREXPOSURE	Severe eye irritation, drying of skin. Excessive inhalation causes headache, dizziness and nausea.
EMERGENCY AND FIRST AID PROCEDURES	Eye contact; Flush with water. Skin Contact: Wash with mild soap and water and apply skin cream. Inhalation: Remove to fresh air - call a physician; apply artificial respiration if necessary.

SECTION VI - REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	Heat, sparks, open flames and fire.
INCOMPATIBILITY (Materials to avoid)		Strong oxidizing agents.	
HAZARDOUS DECOMPOSITION PRODUCTS Normal decomposition may yield carbon monoxide.			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Flush with water into retaining area or container. Avoid exposure to sparks, fire or hot metal surfaces.
WASTE DISPOSAL METHOD	Incinerate under safe conditions or dispose of in accordance with local, state and federal regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION			
RESPIRATORY PROTECTION (Specify type)		Self-contained breathing apparatus for concentrations above TLV limits.	
VENTILATION	LOCAL EXHAUST	SPECIAL	
	Yes		
	MECHANICAL (General)	OTHER	
PROTECTIVE GLOVES		EYE PROTECTION	
		Yes	
OTHER PROTECTIVE EQUIPMENT			

SECTION IX - SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Keep away from heat, sparks and open flame. Use with adequate ventilation. Avoid prolonged or repeated contact with the skin.
OTHER PRECAUTIONS	

U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

Form Approved  
OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

## SECTION I

MANUFACTURER'S NAME <b>Energy Plating Products, Inc.</b>		EMERGENCY TELEPHONE NO. <b>(401) 738-3767</b>
ADDRESS (Number, Street, City, State, and ZIP Code) <b>334 Knight St. Bldg. 2 Warwick, R.I. 02886</b>		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS <b>Energy Carrier Additive</b>
CHEMICAL FAMILY	FORMULA <b>Proprietary Nickel Additive</b>	

## SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES	<b>N/A</b>		OTHERS	<b>N/A</b>	
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
<b>N/A</b>					

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	<b>212.0°F</b>	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	<b>1.1</b>
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR	<b>Water-white</b>	<b>Odorless</b>	

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
<b>N/A</b>			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

**SECTION V - HEALTH HAZARD DATA**

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Possible to cause irritation with sustained and prolonged contact with skin and/eyes.

EMERGENCY AND FIRST AID PROCEDURES

Flush with water, wash with soap and water as with any other foreign substance.

**SECTION VI - REACTIVITY DATA**

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

INCOMPATIBILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

**SECTION VII - SPILL OR LEAK PROCEDURES**

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Small spills may be flushed to sewer. If large spill, use absorbent material such as Oil Dry, treat as solid waste.

WASTE DISPOSAL METHOD

Absorbent material may be disposed of as solid chemical waste in accordance with local regulations. Small spills may be flushed to sewer.

**SECTION VIII - SPECIAL PROTECTION INFORMATION**

RESPIRATORY PROTECTION (Specify type)

None required

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

EYE PROTECTION

OTHER PROTECTIVE EQUIPMENT

**SECTION IX - SPECIAL PRECAUTIONS**

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

NONE

OTHER PRECAUTIONS

PAGE (2)

Form OSHA-20  
Rev. May 72

0908-2388

TRW-01020



MATERIAL SAFETY DATA SHEET FOR ENERGY WETTER NICKEL ADDITIVE  
DATE PRINTED-- 9/5/86  
PRODUCT NO.-- PD08 SUPERSEDES 12/16/85

National Chemical Company  
1420 Elmwood Avenue  
Cranston, Rhode Island 02910

Emergency telephone (401) 461-4000

#### SECTION I-PRODUCT IDENTIFICATION

CHEMICAL NAME --- NONE  
PRODUCT/TRADE NAME --- ENERGY WETTER NICKEL ADDITIVE  
CHEMICAL FAMILY --- PLATING CHEMICAL  
SYNONYMS --- NONE  
MOLECULAR WEIGHT --- NONE  
CAS REGISTRY #/NAME --- NONE  
FORMULA --- PROPRIETARY

MANUFACTURES PRODUCT CODE-- MSDS#--  
EFFECTIVE DATE-- 9/5/86  
FOR FURTHER INFO. CALL-- (401)738-3767 TECHNICAL ASSISTANCE DEPT.

NFPA DESIGNATION --  
HAZARD RATING ---  
4=EXTREME  
3=HIGH  
2=MODERATE  
1=SLIGHT  
0=INSIGNIFICANT

FIRE  
0

HEALTH  
1

REACTIVITY  
0

PERSONAL PROTECTION

SPECIFIC  
0

#### SECTION II - HAZARDOUS INGREDIENTS

% TLV(UNITS)

\*\*

#### SECTION III -PHYSICAL DATA

BOILING POINT --212 F. SPECIFIC GRAVITY(WATER=1)1.0  
VAPOR PRESSURE --N/A % VOLATILE BY VOLUME--N/A  
VAPOR DENSITY(AIR=1)--N/A EVAPORATION RATE (n-Bu-Ac=1)  
SOLUBILITY IN WATER--COMPLETE pH 1% Solution  
APPEARANCE AND ODOR-- LIGHT YELLOW LIQUID CHARACTERISTIC ODOR.

DATE PRINTED--7/5/86

PRODUCT--ENERGY WETTER NICKEL ADDITIVE

## SECTION IV FIRE &amp; EXPLOSION HAZARD DATA

FLASH POINT(METHOD USED) --NONE FLAMMABLE LIMITS-N/A  
EXTINGUISHING MEDIA --WATER, SPRAY, FOAM, DRY CHEMICAL.  
SPECIAL FIRE FIGHTING PROCEDURES--WILL NOT SUPPORT COMBUSTION.  
UNUSUAL FIRE AND EXPLOSION HAZARDS--  
FLAMMABLE LIMITS-N/A

## SECTION V-HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE--NOT ESTABLISHED  
EFFECTS OF OVEREXPOSURE--SKIN AND EYE CONTACT CAN BE IRRITATING.  
EMERGENCY & FIRST AID PROCEDURES--FOR SKIN CONTACT; FLUSH WITH WATER. FOR  
EYES; FLUSH WITH COPIUS AMOUNTS OF WATER FOR FIFTEEN MINUTES. FLUSH  
UNDER THE EYE LIDS. IF INGESTED, NEVER GIVE FLUIDS OR INDUCE VOMITING IF  
PATIENT IS UNCONSCIOUS OR HAVING CONVULSIONS. SEEK MEDICAL ATTENTION.  
NOTE TO PHYSICIAN---  
CHRONIC EFFECTS OF OVEREXPOSURE--N/A  
OTHER HEALTH HAZARDS--FORMALDEHYDE IS CONSIDERED A SUSPECT CARCINOGEN  
IN HUMANS BY IARC, NTP, AND ACGIH ON THE BASIS OF TOXICOLOGICAL TESTING  
WITH ANIMALS.

## SECTION VI-REACTIVITY DATA

STABILITY--( STABLE- X ) ( UNSTABLE- )  
CONDITIONS TO AVOID --AVOID CONTACT WITH HEAVY METALS.  
INCOMPATABILITY (MATERIALS TO AVOID)--COPPER, CHROMIUM, HEAVY METALS.  
HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS-NONE  
HAZARDOUS POLYMERIZATION--(MAY OCCUR- ) ( WILL NOT OCCUR-X )

## SECTION VII-SPILL, LEAK, AND WASTE DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED--RECOVER IF  
POSSIBLE. SWEEP UP AREA, WASH RESIDUAL SPILLAGE WITH COPIOUS AMOUNTS OF  
WATER.  
WASTE DISPOSAL METHODS--DISPOSE OF IN ACCORDANCE WITH RESTRICTIONS OF  
LOCAL AND FEDERAL WATER AND SEWER AUTHORITIES.

DATE PRINTED 9/5/86

PRODUCT--ENERGY WETTER NICKEL ADDITIVE

## SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)-- USE NIOSHA APPROVED COMBINATION ACID GAS/ORGANIC VAPOR CARTRIDGE RESPIRATOR IF VENTILATION IS INADEQUATE.

VENTILATION--GENERAL ROOM VENTILATION TO MINIMIZE EXPOSURE.

LOCAL EXHAUST--RECOMMENDED

MECHANICAL (GENERAL)--RECOMMENDED

SPECIAL--NONE

OTHER--NONE

PROTECTIVE CLOTHING--IMPERVIOUS COVERALLS

PROTECTIVE GLOVES--RUBBER OR NEOPRENE

EYE PROTECTION--CHEMICAL SAFETY GOGGLES OR FACE SHIELD.

OTHER PROTECTIVE EQUIPMENT--EYE WASH STATION AND EMERGENCY SHOWER.

## SECTION IX-SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE--DO NOT CONTAMINATE WATER, FOOD, FEED BY STORAGE OR DISPOSAL. AN OPEN CONTAINER SHOULD NOT BE STORED IN A CLOSED ROOM. STORE IN A COOL DRY AREA.

OTHER PRECAUTIONS--REFER TO TECHNICAL BULLETIN FOR USAGE OF THIS PRODUCT.

## MANUFACTURER'S STATEMENT--

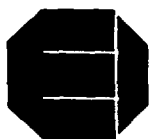
\*\*-- THE INDICATED MATERIAL, IF ANY, DOES NOT HAVE AN ESTABLISHED TLV BUT DOES APPEAR ON ONE OR MORE OF THE FOLLOWING STATES HAZARDOUS SUBSTANCE LISTS

CONNECTICUT, ILLINOIS, MICHIGAN, MAINE, MASSACHUSETTS, MINNESOTA, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, OREGON, RHODE ISLAND, WEST VIRGINIA AND WISCONSIN AND IS PRESENT IN THIS PRODUCT IN AMOUNTS GREATER THAN 1%.

ENERGY PLATING PRODUCTS INC. FURNISHES THE DATA CONTAINED HEREIN IN GOOD FAITH AT CUSTOMER'S REQUEST WITH LIABILITY OR LEGAL

RESPONSIBILITY FOR SAME WHATSOEVER AND NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, IS MADE WITH RESPECT TO SUCH DATA. NOR DOES ENERGY PLATING PRODUCTS INC. GRANT PERMISSION, RECOMMENDATION, OR INDUCEMENT TO INFRINGE ANY PATENT WHETHER OWNED BY ENERGY PLATING PRODUCTS INC. OR OTHERS. THE DATA IS OFFERED SOLELY FOR YOUR INFORMATION AND CONSIDERATION. SINCE CONDITIONS OF USE ARE BEYOND ENERGY PLATING PRODUCTS, INC. CONTROL, USER ASSUMES RESPONSIBILITY AND RISK.

THE INFORMATION HEREIN IS BASED ON TECHNICAL DATA THAT IS BELIEVED TO BE RELIABLE. IT IS INTENDED FOR USE BY PERSONS HAVING TECHNICAL SKILL AND AT THEIR OWN DISCRETION AND RISK. SINCE CONDITIONS OF USE ARE OUTSIDE OUR CONTROL. WE MAKE NO WARRANTIES, EXPRESS OR IMPLIED, AND ASSUME NO LIABILITY IN CONNECTION WITH THE USE OF THIS INFORMATION.



**ENTHONE-OMI  
(NORTH AMERICA), INC.**

**MATERIAL SAFETY DATA SHEET**

**ENSTRIP 110B**

**P.O. BOX 1900  
NEW HAVEN, CT 06508**

**EMERGENCY PHONE NUMBERS**

**PLANTS** 203-934-8611 (8:30am-5pm EST)  
312-598-3210 (8:30am-5pm CST)  
**MFSA** 313-644-5626 (24 hours)  
**CHEMTREC** 800-424-9300 (Transportation)

**PRODUCT CODE#:** 2585  
**DATE ISSUED:** 6/10/87  
**SUPERCEDES:** 6/86  
**PREPARER:** J.A. Zehnder

*FRH*

**II. HAZARDOUS INGREDIENTS**

COMPONENT	COMMON NAME	CAS NO.	OSHA-PEL	ACGIH-TLV	%
Hydrogen peroxide, 50%		7722-84-1	1.4 mg.m3	1.5 mg/m3	100

**III. PHYSICAL PROPERTIES**

SPECIFIC GRAVITY (WATER =1)	1.196	BOILING POINT, °F	237
EVAP.RATE (BUTYL ACETATE=1)	NI	MELTING POINT, °F	-58
VAPOR PRESSURE, mmHg	NI	SOLUBILITY IN WATER	complete
VAPOR DENSITY (AIR=1)	NI	APPEARANCE	clear liquid
pH (AS IS)	1.7	ODOR	none

**IV. FIRE AND EXPLOSION HAZARD DATA**

FLASH POINT, °F	None	FLAMMABLE LIMITS (AIR)	NA	LEL	NA	UEL
-----------------	------	------------------------	----	-----	----	-----

**EXTINGUISHING MEDIA**

☐ Not Combustible ☒ Water fog or spray ☐ Carbon Dioxide ☐ Dry Chemical ☐ Alcohol Foam ☐ Foam ☐ Sand or Earth

**SPECIAL FIRE FIGHTING PROCEDURES**

Wear NIOSH approved full protective clothing and self-contained breathing apparatus. Keep containers cool to prevent rupture and release of material.

**UNUSUAL FIRE AND EXPLOSION HAZARDS**

Strong oxidizer. May cause ignition of combustible materials.

**V. HEALTH HAZARD DATA****EFFECTS OF ACUTE EXPOSURE:**

**INHALATION:** Mist or vapor may damage upper respiratory tract and lung tissue which may cause chemical pneumonia depending upon severity of exposure.

**INGESTION:** Causes severe irritation to mouth and throat and may cause sudden evolution of oxygen gas, possibly leading to injury by distention of the esophagus or stomach. Internal bleeding may result.

**SKIN:** Can cause burns.

**EYES:** Causes burns with damage to eyes and possible blindness.

**EFFECTS OF CHRONIC EXPOSURE:**

None known.

**CARCINOGEN:** Not listed by NTP, IARC, OSHA

**REFERENCE:****EMERGENCY AND FIRST AID PROCEDURES**

**INHALATION:** Remove person from contaminated area. If breathing has stopped, resuscitate and administer oxygen if available.  
Seek immediate medical attention.

**INGESTION:** Never give anything by mouth to an unconscious person, obtain immediate medical attention. If vomiting occurs spontaneously, keep airway clear. If swallowed DO NOT INDUCE VOMITING, give large amounts of water.  
Seek immediate medical attention.

**SKIN:** Immediately wash contaminated skin with plenty of water for 15 minutes. Remove contaminated clothing and footwear. Wash clothing before reuse. Discard footwear if it cannot be decontaminated.  
Seek immediate medical attention.

**EYES:** Immediately flush eyes with plenty of water for at least 15 minutes holding lids apart to ensure flushing of entire surface. Washing eyes within several seconds of exposure is essential to minimize damage.  
Seek immediate medical attention.

**VI. PRECAUTIONS FOR SAFE HANDLING AND USE****SPILL PROCEDURES:**

Avoid contact with skin, eyes and clothing. Wear protective equipment (see section VII). Extinguish all sources of ignition. Contain spill and soak up in NON-COMBUSTIBLE absorbent. Shovel up into clean plastic lined container. Residual trace material may be flushed with copious amounts of water or dilute solutions of Sodium Metabisulfite or Sodium Sulfite. Dispose of in accordance with Local, State and Federal regulations.

**STORAGE AND HANDLING PRECAUTIONS:**

Store in a cool, dry place. Keep away from heat, sparks, and open flame. Loosen cover cautiously when opening.

**ADDITIONAL INFORMATION:**

Store in properly vented container, do not block vent. Rapid decomposition or reaction may be caused by contamination with trace amounts of metals such as iron, copper, nickel and cobalt, their oxides or salts.

**VII. CONTROL MEASURES**

**VENTILATION:** Local exhaust recommended.

**RESPIRATOR:** Use NIOSH approved respirator when air concentration is greater than the TLV or PEL.  
Use cartridge filter for acid mist.

**EYE PROTECTION:** ☐ Safety glasses ☒ Chemical safety goggles ☒ Face shield

**PROTECTIVE GLOVES:** ☒ Neoprene ☐ Natural rubber Other: PVC, butyl rubber

**OTHER PROTECTIVE CLOTHING OR EQUIPMENT:**

Chemically resistant coveralls, hat, and shoes or boots.

**WORK/HYGENIC PRACTICES:**

Emergency eye wash and safety shower should be available. Wash thoroughly after handling.

**ADDITIONAL INFORMATION:**

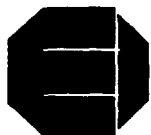
For waste disposal of operating solutions consult Enthone Waste Disposal Procedures. For major spills consult Enthone for disposal assistance. Dispose of in accordance with Local, State, and Federal regulations.

CAS = Chemical Abstract Service  
NI = No relevant information available  
NA = Not applicable

Trade Secret = Claimed as allowed under 29 CFR 1910.1200

PEL = OSHA Permissible Exposure Limit  
TLV = ACGIH Threshold Limit Value  
NTP = National Toxicology Program  
IARC = Int'l Agency for Research on Cancer





ENTHONE-OMI  
(NORTH AMERICA), INC.

MATERIAL SAFETY DATA SHEET

ENSTRIP 110C

P.O. BOX 1900  
NEW HAVEN, CT 06508

EMERGENCY PHONE NUMBERS

PLANTS 203-934-8611 (8:30am-5pm EST)  
312-598-3210 (8:30am-5pm CST)  
MFSA 313-644-5626 (24 hours)  
CHEMTREC 800-424-9300 (Transportation)

PRODUCT CODE#: 2586

DATE ISSUED: 2/9/89

SUPERCEDES: 6/3/87

PREPARER: F.R. Hirtler

*F.R.H.*

II. HAZARDOUS INGREDIENTS

COMPONENT	COMMON NAME	CAS NO.	OSHA-PEL	ACGIH-TLV	%
Water		7732-18-5	NI	NI	>90
Ammonium Nitrate		6484-52-2	NI	NI	<10
Ammonium Chloride		12125-02-9	NI	10 mg/m3*	1

\*As fume

III. PHYSICAL PROPERTIES

SPECIFIC GRAVITY (WATER =1)	1.044	BOILING POINT, °F	209
EVAP.RATE (BUTYL ACETATE=1)	NI	MELTING POINT, °F	NI
VAPOR PRESSURE, mmHg	NI	SOLUBILITY IN WATER	complete
VAPOR DENSITY (AIR=1)	NI	APPEARANCE	clear liquid
pH (AS IS)	8.5	ODOR	none

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT, °F	None	FLAMMABLE LIMITS (AIR)	NA	LEL	NA	UEL
-----------------	------	------------------------	----	-----	----	-----

EXTINGUISHING MEDIA

☒ Not Combustible ☐ Water fog or spray ☐ Carbon Dioxide ☐ Dry Chemical ☐ Alcohol Foam ☐ Foam ☐ Sand or Earth

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus (SCBA) and complete personal protective equipment when potential for exposure to vapors or products of combustion exists.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Exposing dried salts to shock or high temperatures may cause explosion (See Section VI).



**V. HEALTH HAZARD DATA****EFFECTS OF ACUTE EXPOSURE:**

**INHALATION:** Mist or vapor may irritate respiratory tract.

**INGESTION:** Can cause irritation to mouth, throat, esophagus, and stomach.

**SKIN:** Can cause irritation.

**EYES:** Can cause severe irritation.

**EFFECTS OF CHRONIC EXPOSURE:**

Nausea, vomiting, disturbances of the digestive tract, chrome sores, bone fluorosis and possibly osteosclerosis and lung cancer.

**CARCINOGEN:** Not listed by NTP, IARC, OSHA

**REFERENCE:**

**EMERGENCY AND FIRST AID PROCEDURES**

**INHALATION:** Remove person from contaminated area. If breathing has stopped, resuscitate and administer oxygen if available.  
Seek immediate medical attention.

**INGESTION:** Never give anything by mouth to an unconscious person, obtain immediate medical attention. If vomiting occurs spontaneously, keep airway clear. If swallowed give large amounts of water and INDUCE VOMITING.  
Seek immediate medical attention.

**SKIN:** Immediately wash contaminated skin with plenty of water for 15 minutes. Remove contaminated clothing and footwear. Wash clothing before reuse. Discard footwear if it cannot be decontaminated.  
Seek immediate medical attention.

**EYES:** Flush eyes with plenty of water, holding lids apart to ensure flushing of entire surface to prevent or relieve irritation.  
If irritation persists, seek medical attention.

**VI. PRECAUTIONS FOR SAFE HANDLING AND USE****SPILL PROCEDURES:**

Avoid contact with skin, eyes and clothing. Wear protective equipment (see Section VII). Do not breathe mist or vapors. Contain spill and soak up in suitable absorbent. Shovel into plastic lined steel containers. Dilute residual material with copious amounts of water and neutralize. Dispose of in accordance with Local, State and Federal regulations.

**STORAGE AND HANDLING PRECAUTIONS:**

Store in a cool dry place. Loosen cover cautiously when opening.

**ADDITIONAL INFORMATION:**

Contains ammonium nitrate in water solution. If material is evaporated to dryness, treat as ammonium nitrate which is an oxidizer and which may explode under confinement and high temperature or if subjected to strong shocks.

**VII. CONTROL MEASURES**

**VENTILATION:** Local exhaust recommended.

**RESPIRATOR:** Use NIOSH approved respirator when air concentration is greater than the TLV or PEL.  
Use cartridge filter for alkaline mist.

**EYE PROTECTION:** ☐ Safety glasses ☒ Chemical safety goggles ☒ Face shield

**PROTECTIVE GLOVES:** ☒ Neoprene ☒ Natural rubber Other:

**OTHER PROTECTIVE CLOTHING OR EQUIPMENT:**

Chemically resistant coveralls, hat, and shoes or boots.

**WORK/HYGENIC PRACTICES:**

Emergency eye wash and safety shower should be available. Wash thoroughly after handling.

**ADDITIONAL INFORMATION:**

For waste disposal of operating solutions consult Enthone Waste Disposal Procedures. For major spills consult Enthone for disposal assistance. Dispose of in accordance with Local, State, and Federal regulations.

CAS = Chemical Abstract Service  
NI = No relevant information available  
NA = Not applicable

Trade Secret = Claimed as allowed under 29 CFR 1910.1200

PEL = OSHA Permissible Exposure Limit  
TLV = ACGIH Threshold Limit Value  
NTP = National Toxicology Program  
IARC = Int'l Agency for Research on Cancer

**VIII. REACTIVITY DATA**

X	Stable	CONDITIONS TO AVOID: Evaporation to dryness.	
	Unstable		
INCOMPATABILITY (Materials to avoid): Strong reducers, strong bases most common metals, combustibles.			
HAZARDOUS DECOMPOSITION PRODUCTS: Toxic ammonia, oxides of nitrogen, chlorine.			
HAZARDOUS POLYMERIZATION		May occur	CONDITIONS TO AVOID: NA
	X	Will not occur	

**IX. ADDITIONAL INFORMATION**

This product contains one or more chemicals which are subject to the reporting requirements of SARA, TITLE III, Section 313 (40 CFR 372). The chemical(s) are listed in Section II, HAZARDOUS INGREDIENTS, along with the CAS (Chemical Abstract Service) # and the ingredient concentration which will be within 5% of the figure stated. This notice must be included in any subsequent copying of this MSDS.

This Material Safety Data Sheet may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Enthone, Inc. furnishes the data contained herein in good faith at customer's request without liability or legal responsibility for same whatsoever, and no warranty or guarantee, express or implied, is made with respect to such data; nor does Enthone, Inc. grant permission, recommendation, or inducement to infringe any patent whether owned by Enthone or others. The data is offered solely for your information and consideration. Since conditions of use are beyond Enthone's control, user assumes all responsibility and risk.

ENTHONE, INC.  
P. O. BOX 1400  
NEW HAVEN, CT 06503

RECEIVED

MAY 14 1990

ENVIRONMENTAL SAFETY

05/04/90

TRW FASTNERS DIV.  
195 BINNEY STREET

CAMBRIDGE MA 02142

ATTN: Plant Manager/General Manager

Subject: Material Safety Data Sheets

Dear Customer,

Enthone provides its customers with MATERIAL SAFETY DATA SHEETS on the products purchased, using a computerized program which provides automatic generation when a first time sale order for a product is shipped. These products are listed below:

ENSTRIP 110B

ENSTRIP 110C

"IMPORTANT NOTICE"

When generated and mailed through our computerized program, ENTHONE'S MATERIAL SAFETY DATA SHEET is addressed to the "Shipped To" location on the sales order. For the MSDS to serve its purpose as an effective means of hazard communication, the information contained therein must be passed along to all those who handle or use the product. We strongly urge you to forward the MSDS to all parties who have a need for the information contained therein.

Thank you for your cooperation. We value your business highly, and will continue to make every effort to provide you with the information you need to use our products safely.

Sincerely yours,  
ENTHONE, INC.

Regulatory Affairs Department

0908-2400

TRW-01032

BETZ ENTEC, INC  
200 WITMER ROAD  
HORSHAM, PA 19044  
(215) 674-9200

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 1-800-877-1940

PRODUCT : BETZ ENTEC CPS-1  
MASS. REG.#  
(PAGE 1 OF 3)  
EFFECTIVE DATE 04-04-91  
PRINTED: 01-31-92  
REVISIONS TO SECTIONS: 1,3,4,APPENDIX

PRODUCT APPLICATION : INTERNAL BOILER TREATMENT.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION. FOR MASSACHUSETTS, THE PERCENT OF HAZARDOUS INGREDIENT IN THE FORMULATION IS INDICATED BELOW.

SODIUM HYDROXIDE\*\*\*((CAUSTIC SODA)\*\*\*CAS#1310-73-2;CORROSIVE;TOXIC IF ORALLY INGESTED;PEL:2.0MG/M3;TLV:2.0MG/M3(CEILING). ( 2.0-5.0% )

ETHYLENEDIAMINE TETRAACETIC ACID,TETRASODIUM SALT\*\*\*((EDTA.4NA);CAS#64-02-8; IRRITANT(SKIN),CORROSIVE(EYES);PEL:NONE;TLV:NONE.

NITRILOTRIACETIC ACID,TRISODIUM SALT(NTA.3NA);\*\*\*CAS#5064-31-3;SUSPECT CARCINOGEN,PEL:NONE;TLV:NONE. ( 0.1-1.0% )

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 13.0	ODOR: MILD
FL.PT.(DEG.F): 1200	SETA(CC)	SP.GR.(70F)OR DENSITY: 1.176
VAPOR PRESSURE(@PHS): ND		VAPOR DENSITY(AIR=1): ND
VISC cP@70F: 21.6		%SOLUBILITY(WATER): 100
EVAP RATE: (1) OTHER=1		APPEARANCE: LIGHT YELLOW
PHYSICAL STATE: LIQUID		FREEZE POINT(DEG.F): 23

TRW-01033

-----SECTION 3-----REACTIVITY DATA-----

STABLE MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE BETZ TANKS  
CLEAN-OUT CATEGORY: C

0908-2401

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

PRODUCT: BEIZ ENTEC CPS-1

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE

MODERATELY IRRITATING TO THE SKIN

ACUTE EYE EFFECTS \*\*\*

SEVERE IRRITANT TO THE EYES

ACUTE RESPIRATORY EFFECTS \*\*\*

MISTS/AEROSOLS CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE\*\*\*

PRODUCT OR PRODUCT COMPONENT MAY INCREASE THE RISK OF CANCER BASED ON LIMITED ANIMAL DATA.

MEDICAL CONDITIONS AGGRAVATED \*\*\*

NOT KNOWN

SYMPTOMS OF EXPOSURE \*\*\*

MAY CAUSE REDNESS OR ITCHING OF SKIN.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS \*\*\*

MAY BE TOXIC IF ORALLY INGESTED.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT\*\*\*

REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT\*\*\*

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE\*\*\*

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION\*\*\*

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM  
DO NOT INDUCE VOMITING. IMMEDIATELY CONTACT PHYSICIAN. DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS\*\*\*

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.  
FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT

DISPOSAL INSTRUCTIONS\*\*\*

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT  
PRODUCT (AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS\*\*\*

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA: DRY CHEMICAL/CO2/FOAM OR WATER. SLIPPERY CONDITION USE SAND/GRIT

PRODUCT: BETZ ENTIC CFS-1

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION\*\*\*

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS  
RECOMMENDED RESPIRATORY PROTECTION\*\*\*

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,  
USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION\*\*\*

RUBBER GLOVES

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION\*\*\*

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS\*\*\*

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING

HANDLING INSTRUCTIONS\*\*\*

ALKALINE. DO NOT MIX WITH ACIDIC MATERIAL.

\*\*\*\*\*  
THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD  
\*\*\*\*\*

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY

...FDA(21CFR): ALL INGREDIENTS IN THIS PRODUCT ARE AUTHORIZED FOR USE AS BOILER WATER ADDITIVES WHERE THE STEAM PRODUCED MAY CONTACT FOOD.

...USDA FEDERALLY INSPECTED MEAT AND POULTRY PLANTS- AUTHORIZED CAT.:  
SEC.66

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:  
5,236GAL (SODIUM HYDROXIDE)

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: D002=CORROSIVE (PH)

...DOT HAZARD/UN#/ER GUIDE# IS: NOT APPLICABLE

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS:  
THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR REPRODUCTIVE TOXICITY: NITRILOTRIACETIC ACID, NA3(5064-31-3)

...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: NONE

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE) AND DELAYED(CHRONIC)

NFPA/HMIS HEALTH - 2 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - ALK ; PE - B

BETZ ENTEC, INC  
508 PRUDENTIAL ROAD  
HORSHAM, PA 19044  
(215) 674-9200

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) (215) 355-3300 9

PRODUCT : ENTEC 309

*no longer used*

EFFECTIVE DATE 02-05-87  
LATEST VERSION

PRODUCT APPLICATION : CORROSION INHIBITOR/DISPERSANT.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD ARE LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

PHOSPHONIC ACID,(1-HYDROXYETHYLIDINE)BIS-\*\*\*HEDP;CAS#2809-21-4;EYE IRRITANT;PEL:NONE;TLV:NONE.

1-H-BENZOTRIAZOLE,METHYL\*\*\* (TOLYLTRIAZOLE;TTA);CAS#29385-43-1; IRRITANT(EYE);PEL:NONE;TLV:NONE.

*% in product*

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 12.5	ODOR: MILD
FL.PT.(DEG.F):	>200 SETA(CC)	SP.GR.(70F)OR DENSITY: 1.080
VAPOR PRESSURE(mmHG):	ND	VAPOR DENSITY(AIR=1): ND
VISC cps70F:	3.5	%SOLUBILITY(WATER): 100
EVAP.RATE: ND	WATER=1	APPEARANCE: AMBER
PHYSICAL STATE:	LIQUID	FREEZE POINT(DEG.F): 27

-----SECTION 3-----REACTIVITY DATA-----

STABLE

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.



MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: ENTEC 309

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE

SLIGHTLY IRRITATING TO THE SKIN

ACUTE EYE EFFECTS \*\*\*

MODERATELY IRRITATING TO THE EYES

ACUTE RESPIRATORY EFFECTS \*\*\*

MISTS/AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE\*\*\*

PROLONGED OR REPEATED CONTACT MAY CAUSE PRIMARY IRRITANT DERMATITIS.

MEDICAL CONDITIONS AGGRAVATED \*\*\*

NOT KNOWN

SYMPTOMS OF EXPOSURE \*\*\*

MAY CAUSE REDNESS OR ITCHING OF SKIN.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS \*\*\*

MAY BE TOXIC IF ORALLY INGESTED.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT\*\*\*

REMOVE CONTAMINATED CLOTHING.WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT\*\*\*

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE\*\*\*

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR.APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION\*\*\*

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM  
DO NOT INDUCE VOMITING.IMMED.CONTACT PHYSICIAN.DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL,DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS\*\*\*

VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.  
FLUSH AREA WITH WATER.WET AREA MAY BE SLIPPERY.IF SO,SPREAD SAND OR GRIT.

DISPOSAL INSTRUCTIONS\*\*\*

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT(AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS\*\*\*

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS(FULL FACE-PIECE TYPE).

DRY CHEMICAL,CARBON DIOXIDE,FOAM OR WATER

MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: ENTEC 309

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

VENTILATION PROTECTION\*\*\*

ADEQUATE VENTILATION

RECOMMENDED RESPIRATORY PROTECTION\*\*\*

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,  
USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION\*\*\*

RUBBER GLOVES

WASH OFF AFTER EACH USE.REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION\*\*\*

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS\*\*\*

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING

HANDLING INSTRUCTIONS\*\*\*

IMMEDIATELY REMOVE CONTAMINATED CLOTHING,WASH BEFORE REUSE  
ALKALINE.DO NOT MIX WITH ACIDIC MATERIAL.

-----SECTION 9-----FEDERAL REGULATIONS-----

OSHA(29CFR)-USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTIONS  
1910.132-1910.134.

REPORTABLE QUANTITY: AS IS PRODUCT (HAZARDOUS SUBSTANCE)

11,176GAL (POTASSIUM HYROXIDE)

RCRA(40CFR): IF DISCARDED,THIS MATERIAL BEARS HWI# D002

DOT(49CFR)CLASSIFICATION: NOT APPLICABLE

NFPA/HMIS : HEALTH - 1 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - ALK ; PE- B

\*\*\*\*\*

THIS DOCUMENT IS PROVIDED TO SUPPLY ALL THE INFORMATION NECESSARY TO COMPLY  
WITH OSHA HAZARD COMMUNICATIONS REGULATIONS, AND RIGHT-TO-KNOW REQUIREMENTS.  
WHILE THE INFORMATION AND RECOMMENDATIONS SET FORTH HEREIN ARE BELIEVED TO  
BE ACCURATE AS OF THE DATE HEREOF, BETZ LABORATORIES MAKES NO WARRANTY WITH  
RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

HAROLD M. HERSH  
ENVIRONMENTAL INFORMATION COORDINATOR

BETZ ENTEC, INC  
508 PRUDENTIAL ROAD  
HORSHAM, PA 19044  
(215) 674-9200

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) (215) 355-3300

DUCT : ENTEC 318

EFFECTIVE DATE 02-05-87  
LATEST VERSION

DUCT APPLICATION : CORROSION INHIBITOR/DISPERSANT.

---SECTION 1-----HAZARDOUS INGREDIENTS-----

FORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC  
DUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD ARE  
TED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE  
CHRONIC HAZARDS OF THIS FORMULATION.

SODIUM HYDROXIDE\*\*\* (CAUSTIC SODA); CAS#1310-73-2; CORROSIVE; TOXIC IF ORALLY  
INGESTED; PEL: 2.0MG/M3; TLV: 2.0MG/M3 (CEILING).

SODIUM MOLYBDATE\*\*\* (MOLYBDIC ACID, DISODIUM SALT); CAS#7631-95-0; POSSIBLE  
RESPIRATORY IRRITANT; PEL: 5MG/M3 (AS MO); TLV: 5MG/M3 (AS MO).

4-H-BENZOTRIAZOLE, METHYL\*\*\* (TOLYLTRIAZOLE; TTA); CAS#29385-43-1;  
IRRITANT (EYE); PEL: NONE; TLV: NONE.

TRADE SECRET INGREDIENT; EYE IRRITANT; PEL: NONE; TLV: NONE. THIS CHEMICAL IS  
NOT ON ANY STATE RIGHT-TO-KNOW LIST.

PHOSPHONIC ACID, (1-HYDROXYETHYLIDINE) BIS-\*\*\* HEDP; CAS#2809-21-4; EYE  
IRRITANT; PEL: NONE; TLV: NONE.

*2% in product*

---SECTION 2-----TYPICAL PHYSICAL DATA-----

AS IS	(APPROX.) 12.6	ODOR: MILD
T. (DEG. F):	>200 SETA (CC).	SP. GR. (70F) OR DENSITY: 1.168
R PRESSURE (mmHG):	ND	VAPOR DENSITY (AIR=1): ND
CD 570F:	14	XSOLUBILITY (WATER): 100
.RATE: <1	ETHER=1	APPEARANCE: YELLOW
ICAL STATE:	LIQUID	FREEZE POINT (DEG. F): 25

---SECTION 3-----REACTIVITY DATA-----

LE

HAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

PRODUCT: ENTEC 210

-----SECTION 4-----HEALTH HAZARD EFFECTS-----  
 ACUTE SKIN EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE  
 MODERATELY IRRITATING TO THE SKIN  
 ACUTE EYE EFFECTS \*\*\*  
 SEVERE IRRITANT TO THE EYES, POSSIBLY CORROSIVE  
 ACUTE RESPIRATORY EFFECTS \*\*\*  
 MISTS/AEROSOLS CAUSE IRRITATION TO UPPER RESPIRATORY TRACT  
 CHRONIC EFFECTS OF OVEREXPOSURE\*\*\*  
 PROLONGED OR REPEATED CONTACT MAY CAUSE PRIMARY IRRITANT DERMATITIS  
 MEDICAL CONDITIONS AGGRAVATED \*\*\*  
 NOT KNOWN

DUCT EN  
 ---SECTION  
 NTILATION  
 ADEQUATE  
 COMMENDED  
 IF VENTIL  
 USE A RES  
 COMMENDED  
 RUBBER GL  
 WASH OFF  
 COMMENDED  
 SPLASH PR

SYMPTOMS OF EXPOSURE \*\*\*  
 MAY CAUSE REDNESS OR ITCHING OF SKIN.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS \*\*\*.  
 MAY BE TOXIC IF ORALLY INGESTED.

---SECTION

-----SECTION 5-----FIRST AID INSTRUCTIONS-----  
 SKIN CONTACT\*\*\*  
 REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY  
 SOAP SOLUTION OR WATER FOR 15 MINUTES

DRAKE INST  
 KEEP DRUM  
 PROTECT F  
 NDLING INS  
 IMMEDIATE  
 ALKALINE

EYE CONTACT\*\*\*  
 IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT  
 PHYSICIAN FOR ADDITIONAL TREATMENT

---SECTION

INHALATION EXPOSURE\*\*\*  
 REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE  
 FIRST AID TREATMENT AS NECESSARY

A POTABLE  
 1A(29CFR)-  
 1910.132-

INGESTION\*\*\*  
 DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM  
 DO NOT INDUCE VOMITING. IMMEDIATE CONTACT PHYSICIAN. DILUTE CONTENTS OF  
 - STOMACH USING 3-4 GLASSES MILK OR WATER

SUPPLIED  
 PORTABLE G  
 2601GAL (1  
 1A(40CFR)  
 [(49CFR)CL  
 1A/HMIS

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----  
 SPILL INSTRUCTIONS\*\*\*

\*\*\*\*\*

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB  
 ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE  
 CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL,  
 SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.  
 FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. IF SO, SPREAD  
 SAND OR GRIT.

S DOCUMENT  
 H OSHA HAZ  
 ILE THE INF  
 ACCURATE A  
 SPECT THERE

DISPOSAL INSTRUCTIONS\*\*\*  
 WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY  
 SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A  
 PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT  
 PRODUCT (AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL  
 FIRE EXTINGUISHING INSTRUCTIONS\*\*\*  
 FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING  
 APPARATUS (FULL FACE-PIECE TYPE).  
 DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER

PRODUCT: ENTEC 318

SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

VENTILATION PROTECTION\*\*\*

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS

COMMENDED RESPIRATORY PROTECTION\*\*\*

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,

USE A RESPIRATOR WITH DUST/MIST FILTERS.

DERMATITIS

COMMENDED SKIN PROTECTION\*\*\*

RUBBER GLOVES

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

COMMENDED EYE PROTECTION\*\*\*

SPLASH PROOF CHEMICAL GOGGLES

SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS\*\*\*

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING

LOADING INSTRUCTIONS\*\*\*

E QUANTITY

IMMEDIATELY REMOVE CONTAMINATED CLOTHING, WASH BEFORE REUSE

ALKALINE. DO NOT MIX WITH ACIDIC MATERIAL.

LY CONTACT

SECTION 9-----FEDERAL REGULATIONS-----

POTABLE WATER USE: OHIO

PROPRIATE

A(29CFR)-USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTIONS 1910.132-1910.134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

IVE VICTIM

PORTABLE QUANTITY: AS IS PRODUCT (HAZARDOUS SUBSTANCE)

ENTS OF

2601GAL (SODIUM HYDROXIDE)

A(40CFR)- IF DISCARDED, THIS MATERIAL BEARS HWI# D002

(49CFR)CLASSIFICATION: NOT APPLICABLE

A/HMIS HEALTH - 2 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - ALK ; PE- B

AND ABSORBI

HE WASTE

ED SOIL,

D

THIS DOCUMENT IS PROVIDED TO SUPPLY ALL THE INFORMATION NECESSARY TO COMPLY WITH OSHA HAZARD COMMUNICATIONS REGULATIONS, AND RIGHT-TO-KNOW REQUIREMENTS. WHILE THE INFORMATION AND RECOMMENDATIONS SET FORTH HEREIN ARE BELIEVED TO BE ACCURATE AS OF THE DATE HEREOF, BETZ LABORATORIES MAKES NO WARRANTY WITH RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

TARY

EMENT, A

PDES PERMI

HAROLD M. HERSH  
ENVIRONMENTAL INFORMATION COORDINATOR

BREATHING

BETZ ENTEC, INC  
508 PRUDENTIAL ROAD  
HORSHAM, PA 19044  
(215) 674-9200

1080 gals gmate  
180 gals 3 summer  
1260 gals

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) (215) 355-3300

14.2 lbs x

PRODUCT : ENTEC 319  
MASS. REG.#

EFFECTIVE DATE 10-14-87 423 lbs NOON  
LATEST VERSION

PRODUCT APPLICATION : CORROSION INHIBITOR.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION. FOR MASSACHUSETTS, THE PERCENT OF HAZARDOUS INGREDIENT IN THE FORMULATION IS INDICATED BELOW.

SODIUM HYDROXIDE\*\*\* (CAUSTIC SODA); CAS#1310-73-2; CORROSIVE; TOXIC IF ORALLY INGESTED; PEL: 2.0MG/M3; TLV: 2.0MG/M3 (CEILING). ( 3 %)

SODIUM SILICATE\*\*\* (SILICIC ACID SODIUM SALT); CAS#1344-09-8; EYE IRRITANT; PEL: NONE; TLV: NONE.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 11.6	ODOR: NONE
FL.PT. (DEG.F):	>200 SETA(CC)	SP.GR. (70F) OR DENSITY: 1.404
VAPOR PRESSURE (mmHG):	ND	VAPOR DENSITY (AIR=1): ND
VISC cps 70F:	36.5	% SOLUBILITY (WATER): 100
EVAP. RATE: ND	WATER=1	APPEARANCE: COLORLESS
PHYSICAL STATE:	LIQUID	FREEZE POINT (DEG.F): 23

-----SECTION 3-----REACTIVITY DATA-----

STABLE

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: ENTEC 319

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE

MODERATELY IRRITATING TO THE SKIN

ACUTE EYE EFFECTS \*\*\*

SEVERE IRRITANT TO THE EYES, POSSIBLY CORROSIVE

ACUTE RESPIRATORY EFFECTS \*\*\*

MISTS/AEROSOLS CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE\*\*\*

PROLONGED OR REPEATED CONTACT MAY CAUSE PRIMARY IRRITANT DERMATITIS.

MEDICAL CONDITIONS AGGRAVATED \*\*\*

NOT KNOWN

SYMPTOMS OF EXPOSURE \*\*\*

MAY CAUSE REDNESS OR ITCHING OF SKIN.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS \*\*\*

MAY BE TOXIC IF ORALLY INGESTED.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT\*\*\*

REMOVE CONTAMINATED CLOTHING.WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT\*\*\*

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE\*\*\*

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR.APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION\*\*\*

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM  
DO NOT INDUCE VOMITING.IMMED.CONTACT PHYSICIAN.DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL,DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS\*\*\*

VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.

FLUSH AREA WITH WATER.WET AREA MAY BE SLIPPERY.IF SO,SPREAD SAND OR GRIT.

DISPOSAL INSTRUCTIONS\*\*\*

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT(AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS\*\*\*

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS(FULL FACE-PIECE TYPE).

DRY CHEMICAL,CARBON DIOXIDE,FOAM OR WATER

MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: ENTEC 319

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

VENTILATION PROTECTION\*\*\*

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS  
RECOMMENDED RESPIRATORY PROTECTION\*\*\*

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,  
USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION\*\*\*

RUBBER GLOVES

REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION\*\*\*

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS\*\*\*

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING

HANDLING INSTRUCTIONS\*\*\*

IMMEDIATELY REMOVE CONTAMINATED CLOTHING, WASH BEFORE REUSE  
ALKALINE. DO NOT MIX WITH ACIDIC MATERIAL.

-----SECTION 9-----FEDERAL REGULATIONS-----

EPA POTABLE WATER USE: APPROVED UP TO 60 PPM  
OHIO(100 PPM), FLORIDA(10  
PPM)

OSHA(29CFR)-USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTIONS  
1910.132-1910.134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE  
SUPPLIED AIR RESPIRATORS.

REPORTABLE QUANTITY: AS IS PRODUCT (HAZARDOUS SUBSTANCE)  
2850GAL (SODIUM HYDROXIDE)

RCRA(40CFR): IF DISCARDED, THIS MATERIAL BEARS HWI# NOT APPLICABLE

DOT(49CFR)CLASSIFICATION: NOT APPLICABLE

NFPA/HMIS : HEALTH - 2 ; FIRE - 0 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE- B

\*\*\*\*\*

THIS DOCUMENT IS PROVIDED TO SUPPLY ALL THE INFORMATION NECESSARY TO COMPLY  
WITH OSHA HAZARD COMMUNICATIONS REGULATIONS, AND RIGHT-TO-KNOW REQUIREMENTS.  
WHILE THE INFORMATION AND RECOMMENDATIONS SET FORTH HEREIN ARE BELIEVED TO  
BE ACCURATE AS OF THE DATE HEREOF, BETZ LABORATORIES MAKES NO WARRANTY WITH  
RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

HAROLD M. HERSH  
ENVIRONMENTAL INFORMATION COORDINATOR



BETZ ENTEC, INC  
200 WITMER ROAD  
HORSHAM, PA 19044  
(215) 674-9200

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 1-800-877-1940

PRODUCT : BETZ ENTEC ~~346~~  
MASS. REG. #

(PAGE 1 OF 3)  
EFFECTIVE DATE 02-16-91  
PRINTED: 09-23-94

PRODUCT APPLICATION : BIOCIDES

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION. FOR MASSACHUSETTS, THE PERCENT OF HAZARDOUS INGREDIENT IN THE FORMULATION IS INDICATED BELOW.

SODIUM DICHLORO-S-TRIAZINETRIONE DIHYDRATE\*\*\*CAS#51580-86-0;OXIDIZER;  
IRRITANT-SKIN;CORROSIVE-EYE;VAPORS MAY CAUSE LUNG DAMAGE;  
PEL:1PPM(CHLORINE);TLV:1PPM(CHLORINE). ( 51.0-60.0% )

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: 5% SOL.	(APPROX.) 8.2	ODOR: CHLORINE
FL.PT.(DEG.F): >200	SETA(CC)	SP.GR.(70F)OR DENSITY: 85LBS/CU.FT.
VAPOR PRESSURE(mmHG): ND		VAPOR DENSITY(AIR=1): ND
VISC cps70F: NA		%SOLUBILITY(WATER): 10
EVAP.RATE: ND	WATER=1	APPEARANCE: WHITE
PHYSICAL STATE: POWDER		FREEZE POINT(DEG.F): NA

-----SECTION 3-----REACTIVITY DATA-----

STABLE. OXIDIZER. SLOWLY RELEASES HALOGEN GASES WHEN CONTAMINATED WITH MOISTURE. MAY REACT WITH ALKALIES, ACIDS, ORGANICS OR REDUCING AGENTS. DO NOT CONTAMINATE. BETZ TANK CLEAN-OUT CATEGORY 'B'.

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

## MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: BETZ ENTEC-346

## -----SECTION 4-----HEALTH HAZARD EFFECTS-----

## ACUTE SKIN EFFECTS \*\*\*

MODERATELY IRRITATING TO THE SKIN

## ACUTE EYE EFFECTS \*\*\*

CORROSIVE TO THE EYES

## ACUTE RESPIRATORY EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE

DUSTS, VAPORS, MISTS OR AEROSOLS CAUSE RESPIRATORY TRACT IRRITATION.

## CHRONIC EFFECTS OF OVEREXPOSURE\*\*\*

PROLONGED OR REPEATED EXPOSURE MAY CAUSE LUNG DAMAGE.

## MEDICAL CONDITIONS AGGRAVATED \*\*\*

NOT KNOWN

## SYMPTOMS OF EXPOSURE \*\*\*

INHALATION OF DUST AND/OR VAPORS MAY CAUSE EYE, NOSE, THROAT AND RESPIRATORY TRACT IRRITATION.

## -----SECTION 5-----FIRST AID INSTRUCTIONS-----

## SKIN CONTACT\*\*\*

REMOVE CLOTHING. WASH AREA WITH LARGE AMOUNTS OF SOAP SOLUTION OR WATER FOR 15 MIN. IMMEDIATELY CONTACT PHYSICIAN

## EYE CONTACT\*\*\*

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

## INHALATION EXPOSURE\*\*\*

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

## INGESTION\*\*\*

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM  
DO NOT INDUCE VOMITING. IMMEDIATELY CONTACT PHYSICIAN. DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

## -----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

## SPILL INSTRUCTIONS\*\*\*

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. SPILLED MATERIAL WHICH CAN NOT BE RECOVERED FOR RE-USE, SHOULD BE PLACED IN A WASTE DISPOSAL CONTAINER AND DISPOSED OF IN AN APPROVED PESTICIDE LANDFILL. SEE PRODUCT LABEL STORAGE AND DISPOSAL INSTRUCTIONS.  
PRODUCT RELEASES CHLORINE WHEN WET. SPILL AREA MAY BE NEUTRALIZED WITH SODIUM BISULFITE SOLUTION

## DISPOSAL INSTRUCTIONS\*\*\*

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS) -  
DISPOSE OF IN APPROVED PESTICIDE FACILITY OR ACCORDING TO LABEL INSTRUCTIONS

## FIRE EXTINGUISHING INSTRUCTIONS\*\*\*

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA: FLOOD WITH WATER. USE OF CO2 OR FOAM MAY NOT BE EFFECTIVE.

TRW-01046

0908-2414

## MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: BETZ ~~ENTE~~ 346

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----  
USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE  
RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.  
VENTILATION PROTECTION\*\*\*

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS  
RECOMMENDED RESPIRATORY PROTECTION\*\*\*

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,  
USE RESPIRATOR WITH ACID GASSES CARTRIDGES AND DUST/MIST PREFILTERS  
RECOMMENDED SKIN PROTECTION\*\*\*

RUBBER GLOVES  
WASH OFF AFTER EACH USE.REPLACE AS NECESSARY  
RECOMMENDED EYE PROTECTION\*\*\*  
AIRTIGHT CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----  
STORAGE INSTRUCTIONS\*\*\*

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.  
KEEP DRY

HANDLING INSTRUCTIONS\*\*\*

CONTAINS AN OXIDIZER. AVOID ALL CONTACT WITH REDUCING AGENTS,  
OILS, GREASES, ORGANICS AND ACIDS. CORROSIVE TO SKIN AND/OR EYES.

\*\*\*\*\*  
THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD  
\*\*\*\*\*

## APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE  
EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.  
ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: THIS IS AN EPA REGISTERED BIOCIDES AND IS EXEMPT FROM TSCA INVENTORY  
REQUIREMENTS

...FIFRA(40CFR):EPA REG.NO. 34571- 7

...USDA FEDERALLY INSPECTED MEAT AND POULTRY PLANTS- AUTHORIZED CAT.:  
SEC.G7

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE  
IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD/UN#/ER GUIDE# IS: NOT APPLICABLE

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE

...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: NONE

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE),DELAYED(CHRONIC) AND REACTI

...MICHIGAN CRITICAL MATERIALS: NONE

NFPA/HMIS : HEALTH - 3 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - OXY ; PE - B

BETZ ENTEC, INC  
200 WITMER ROAD  
HORSHAM, PA 19044  
(215) 674-9200

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 1-800-877-1940

PRODUCT : BETZ ~~ENTE~~ 303

(PAGE 1 OF 3)  
EFFECTIVE DATE 02-16-91  
PRINTED: 09-23-94

PRODUCT APPLICATION : BIOCIDES

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

SODIUM DIMETHYLDITHIOCARBAMATE\*\*\*CAS#128-04-1;IRRITANT;POTENTIAL REPRODUCTIVE TOXIN;PEL:NONE;TLV:NONE.

DISODIUM ETHYLENEBIS(DITHIOCARBAMATE)\*\*\*CAS#142-59-6;EYE AND SKIN IRRITANT; POSSIBLE SENSITIZER;POTENTIAL NERVOUS SYSTEM AND REPRODUCTIVE SYSTEM TOXIN; PEL:NONE;TLV:NONE.

ETHYLENE THIOUREA(2-IMIDAZOLIDINETHIONE)\*\*\*CAS#96-45-7;IRRITANT;SUSPECT CARCINOGEN;PEL/TLV:NONE.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 11.5	ODOR: STRONG
FL.PT.(DEG.F): >200	TAG(CC)	SP.GR.(70F)OR DENSITY: 1.150
VAPOR PRESSURE(mmHG): 19		VAPOR DENSITY(AIR=1): ND
VISC cps70F: 5		%SOLUBILITY(WATER): 100
EVAP.RATE: <1	ETHER=1	APPEARANCE: GREEN
PHYSICAL STATE: LIQUID		FREEZE POINT(DEG.F): 12

-----SECTION 3-----REACTIVITY DATA-----

STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE.BETZ TANK CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

## MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: BETZ ~~ENTEC 369~~

## -----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE

MODERATELY IRRITATING TO THE SKIN

ACUTE EYE EFFECTS \*\*\*

SEVERE IRRITANT TO THE EYES

ACUTE RESPIRATORY EFFECTS \*\*\*

MISTS/AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE\*\*\*

NO EVIDENCE OF POTENTIAL CHRONIC EFFECTS.

MEDICAL CONDITIONS AGGRAVATED \*\*\*

NOT KNOWN

SYMPTOMS OF EXPOSURE \*\*\*

MAY CAUSE REDNESS OR ITCHING OF SKIN.

## -----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT\*\*\*

REMOVE CLOTHING. WASH AREA WITH LARGE AMOUNTS OF SOAP SOLUTION OR WATER FOR 15 MIN. IMMEDIATELY CONTACT PHYSICIAN

EYE CONTACT\*\*\*

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE\*\*\*

REMOVE VICTIM FROM CONTAMINATED AREA. APPLY NECESSARY FIRST AID TREATMENT. IMMEDIATELY CONTACT A PHYSICIAN.

INGESTION\*\*\*

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM DILUTE CONTENTS OF STOMACH. INDUCE VOMITING BY ONE OF THE STANDARD METHODS. IMMEDIATELY CONTACT A PHYSICIAN

## -----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS\*\*\*

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE CONTAMINATED ABSORBENT SHOULD BE CONSIDERED A PESTICIDE AND DISPOSED OF IN AN APPROVED PESTICIDE LANDFILL. SEE PRODUCT LABEL STORAGE AND DISPOSAL INSTRUCTIONS.

FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS\*\*\*

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS) -

DISPOSE OF IN APPROVED PESTICIDE FACILITY OR ACCORDING TO LABEL INSTRUCTIONS

FIRE EXTINGUISHING INSTRUCTIONS\*\*\*

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER

## MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: BETZ ENTEC 309

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----  
USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE  
RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.  
VENTILATION PROTECTION\*\*\*

ADEQUATE VENTILATION

RECOMMENDED RESPIRATORY PROTECTION\*\*\*

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,  
USE A RESPIRATOR WITH PESTICIDES FILTER/CARTRIDGES

RECOMMENDED SKIN PROTECTION\*\*\*

NEOPRENE GLOVES

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION\*\*\*

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----  
STORAGE INSTRUCTIONS\*\*\*

KEEP DRUMS &amp; PAILS CLOSED WHEN NOT IN USE.

STORE IN COOL VENTILATED LOCATION. STORE AWAY FROM OXIDIZERS

HANDLING INSTRUCTIONS\*\*\*

ALKALINE. DO NOT MIX WITH ACIDIC MATERIAL.

\*\*\*\*\*  
THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD  
\*\*\*\*\*

## APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE  
EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.  
ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: THIS IS AN EPA REGISTERED BIOCIDES AND IS EXEMPT FROM TSCA INVENTORY  
REQUIREMENTS

...FIFRA(40CFR):EPA REG.NO. 31910-2-34571

...FDA(21CFR) INGREDIENTS AUTHORIZED UNDER:

SECTION 176.300

...USDA FEDERALLY INSPECTED MEAT AND POULTRY PLANTS- AUTHORIZED CAT.:  
SEC.67

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

348 GALLONS DUE TO ETHYLENE THIOUREA

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE  
IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD/UN#/ER GUIDE# IS: ORM-E(WHEN CONTAINER &gt; RQ) NA9188/#31

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS:

THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE  
CANCER OR REPRODUCTIVE TOXICITY: ETHYLENE THIOUREA(96-45-7)

...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: ETHYLENE THIOUREA(96-45-7) , 0.1-1.0% ;

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE)

...MICHIGAN CRITICAL MATERIALS: NONE

NFPA/HMIS : HEALTH - 2 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - B

BETZ ENTEC, INC  
200 WITMER ROAD  
HORSHAM, PA 19044  
(215) 674-9200

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 1-800-877-1940

PRODUCT : BETZ ENTEC 715  
MASS. REG.#

(PAGE 1 OF 3)  
EFFECTIVE DATE 02-16-91  
PRINTED: 01-31-92

REVISIONS TO SECTIONS: 3, APPENDIX

PRODUCT APPLICATION - INTERNAL BOILER TREATMENT.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION. FOR MASSACHUSETTS, THE PERCENT OF HAZARDOUS INGREDIENT IN THE FORMULATION IS INDICATED BELOW.

THIS PRODUCT IS NOT HAZARDOUS AS DEFINED BY OSHA REGULATIONS.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 10.2	ODOR: NONE
FL.PT.(DEG.F): >200	SETA(CC)	SP.GR.(70F)OR DENSITY: 1.013
VAPOR PRESSURE(mmHG): ND		VAPOR DENSITY(AIR=1): ND
VISC cps70F: 11.0		%SOLUBILITY(WATER): 100
EVAP.RATE: ND WATER=1		APPEARANCE: LIGHT YELLOW
PHYSICAL STATE: LIQUID		FREEZE POINT(DEG.F): 32

-----SECTION 3-----REACTIVITY DATA-----

TRW-01051

STABLE MAY REACT WITH STRONG OXIDIZERS. DO NOT CONTAMINATE BETZ TANK  
CLEAN-OUT CATEGORY (A)

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES

PRODUCT: SEIZ HATEC 715

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE

SLIGHTLY IRRITATING TO THE SKIN

ACUTE EYE EFFECTS \*\*\*

MODERATELY IRRITATING TO THE EYES

ACUTE RESPIRATORY EFFECTS \*\*\*

MISTS/AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE\*\*\*

NO EVIDENCE OF POTENTIAL CHRONIC EFFECTS.

MEDICAL CONDITIONS AGGRAVATED \*\*\*

NOT KNOWN

SYMPTOMS OF EXPOSURE \*\*\*

MAY CAUSE REDNESS OR ITCHING OF SKIN.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT\*\*\*

REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT\*\*\*

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE\*\*\*

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION\*\*\*

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM  
DO NOT INDUCE VOMITING. IMMEDIATELY CONTACT PHYSICIAN. DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS\*\*\*

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB ON ABSORBENT MATERIAL PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.  
FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS\*\*\*

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS\*\*\*

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER



MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: BETZ ENTRO 715

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION\*\*\*

ADEQUATE VENTILATION

RECOMMENDED RESPIRATORY PROTECTION\*\*\*

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY, USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION\*\*\*

RUBBER GLOVES

WASH OFF AFTER EACH USE.REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION\*\*\*

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS\*\*\*

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

DO NOT FREEZE. IF FROZEN, THAW AND MIX COMPLETELY PRIOR TO USE

HANDLING INSTRUCTIONS\*\*\*

ALKALINE. DO NOT MIX WITH ACIDIC MATERIAL.

\*\*\*\*\*  
THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD  
\*\*\*\*\*

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY  
...FDA(21CFR): ALL INGREDIENTS IN THIS PRODUCT ARE AUTHORIZED FOR USE AS BOILER WATER ADDITIVES WHERE THE STEAM PRODUCED MAY CONTACT FOOD.

...USDA FEDERALLY INSPECTED MEAT AND POULTRY PLANTS- AUTHORIZED CAT.:  
SEC.66

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:  
NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD/UN# /ER GUIDE# IS: NOT APPLICABLE

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE

...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: NONE

...SARA SECTION 312 HAZARD CLASS: PRODUCT IS NONHAZARDOUS UNDER SECTION 311/312

NFPA/HMIS : HEALTH - 1 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - ALK ; PE - B

BETZ ENTEC, INC  
200 WITMER ROAD  
HORSHAM, PA 19044  
(215) 674-9200

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 1-800-877-1940

PRODUCT : BETZ ENTEC 718  
MASS. REG.#

(PAGE 1 OF 3)  
EFFECTIVE DATE 02-16-91  
PRINTED: 08-26-92

PRODUCT APPLICATION : INTERNAL BOILER TREATMENT.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION. FOR MASSACHUSETTS, THE PERCENT OF HAZARDOUS INGREDIENT IN THE FORMULATION IS INDICATED BELOW.

THIS PRODUCT IS NOT HAZARDOUS AS DEFINED BY OSHA REGULATIONS.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 10.1	ODOR: MILD
FL.PT.(DEG.F): >200	SETA(CC)	SP.GR.(70F)OR DENSITY: 1.205
VAPOR PRESSURE(mmHG): ND		VAPOR DENSITY(AIR=1): ND
VISC cps70F: 200		*SOLUBILITY(WATER): 100
EVAP.RATE: <1	ETHER=1	APPEARANCE: YELLOW
PHYSICAL STATE: LIQUID		FREEZE POINT(DEG.F): 21

-----SECTION 3-----REACTIVITY DATA-----

STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE.BETZ TANK  
CLEAN-OUT CATEGORY 'A'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

## MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: BETZ ENTEC 718

## -----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE

SLIGHTLY IRRITATING TO THE SKIN

ACUTE EYE EFFECTS \*\*\*

MODERATELY IRRITATING TO THE EYES

ACUTE RESPIRATORY EFFECTS \*\*\*

MISTS/AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE\*\*\*

NO EVIDENCE OF POTENTIAL CHRONIC EFFECTS.

MEDICAL CONDITIONS AGGRAVATED \*\*\*

NOT KNOWN

SYMPTOMS OF EXPOSURE \*\*\*

MAY CAUSE REDNESS OR ITCHING OF SKIN.

## -----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT\*\*\*

REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT\*\*\*

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE\*\*\*

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION\*\*\*

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM  
DO NOT INDUCE VOMITING. IMMEDIATELY CONTACT PHYSICIAN. DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

## -----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS\*\*\*

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.  
FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS\*\*\*

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS) -

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS\*\*\*

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA:  
DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER

## MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: BETZ ENTEC 718

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----  
USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE  
RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.  
VENTILATION PROTECTION\*\*\*

ADEQUATE VENTILATION  
RECOMMENDED RESPIRATORY PROTECTION\*\*\*

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,  
USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION\*\*\*

RUBBER GLOVES

WASH OFF AFTER EACH USE.REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION\*\*\*

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----  
STORAGE INSTRUCTIONS\*\*\*

KEEP DRUMS &amp; PAILS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING

HANDLING INSTRUCTIONS\*\*\*

ALKALINE.DO NOT MIX WITH ACIDIC MATERIAL.

\*\*\*\*\*  
THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD  
\*\*\*\*\*

## APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE  
EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.  
ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY

...FDA(21CFR):ALL INGREDIENTS IN THIS PRODUCT ARE AUTHORIZED FOR USE AS BOILER  
WATER ADDITIVES WHERE THE STEAM PRODUCED MAY CONTACT FOOD.

...USDA FEDERALLY INSPECTED MEAT AND POULTRY PLANTS- AUTHORIZED CAT.:

SEC.G6

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE  
IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD/UN#/ER GUIDE# IS: NOT APPLICABLE

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE

...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: NONE

...SARA SECTION 312 HAZARD CLASS: PRODUCT IS NONHAZARDOUS UNDER SECTION 311/31

NFPA/HMIS : HEALTH - 1 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - B

BETZ ENTEC, INC  
200 WITMER ROAD  
HORSHAM, PA 19044  
(215) 674-9200

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 1-800-877-1940

PRODUCT : BETZ ENTEC 725  
MASS. REG. #

(PAGE 1 OF 3)  
EFFECTIVE DATE 08-20-91  
PRINTED: 07-08-92

PRODUCT APPLICATION : INTERNAL BOILER TREATMENT.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION. FOR MASSACHUSETTS, THE PERCENT OF HAZARDOUS INGREDIENT IN THE FORMULATION IS INDICATED BELOW.

SODIUM HYDROXIDE(CAUSTIC SODA)\*\*\*CAS#1310-73-2;CORROSIVE;TOXIC IF ORALLY  
INGESTED;PEL:2.0MG/M3;TLV:2.0MG/M3(CEILING). ( 41.0-50.0% )

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: 5% SOL. (APPROX.) 13.1	ODOR: NONE
FL.PT.(DEG.F): >200 P-M(CC)	SP.GR.(70F)OR DENSITY: 1.529
VAPOR PRESSURE(mmHG): 18	VAPOR DENSITY(AIR=1): <1
VISC cps70F: 20	%SOLUBILITY(WATER): 100
EVAP.RATE: <1 ETHER=1	APPEARANCE: COLORLESS
PHYSICAL STATE: LIQUID	FREEZE POINT(DEG.F): 10

-----SECTION 3-----REACTIVITY DATA-----

TRW-01057

STABLE.MAY REACT WITH ACIDS.DO NOT CONTAMINATE. BETZ TANK CLEAN-OUT  
CATEGORY 'C'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

PRODUCT: BETZ ENTEC 725

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE

CORROSIVE TO SKIN

ACUTE EYE EFFECTS \*\*\*

CORROSIVE TO THE EYES

ACUTE RESPIRATORY EFFECTS \*\*\*

MISTS/AEROSOLS CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE\*\*\*

PROLONGED OR REPEATED CONTACT MAY CAUSE TISSUE NECROSIS AND/OR DERMATITIS.

MEDICAL CONDITIONS AGGRAVATED \*\*\*

NOT KNOWN

SYMPTOMS OF EXPOSURE \*\*\*

CAUSES SEVERE IRRITATION, BURNS OR TISSUE ULCERATION WITH SUBSEQUENT SCARRING.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS \*\*\*

MAY BE TOXIC IF ORALLY INGESTED.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT\*\*\*

REMOVE CLOTHING. WASH AREA WITH LARGE AMOUNTS OF SOAP SOLUTION OR WATER FOR 15 MIN. IMMEDIATELY CONTACT PHYSICIAN

EYE CONTACT\*\*\*

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE\*\*\*

REMOVE VICTIM FROM CONTAMINATED AREA. APPLY NECESSARY FIRST AID TREATMENT. IMMEDIATELY CONTACT A PHYSICIAN.

INGESTION\*\*\*

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM  
DO NOT INDUCE VOMITING. IMMEDIATELY CONTACT PHYSICIAN. DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS\*\*\*

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.  
FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS\*\*\*

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS\*\*\*

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER

PRODUCT: BETZ ENTEC 725

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION\*\*\*

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS  
RECOMMENDED RESPIRATORY PROTECTION\*\*\*

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,  
USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION\*\*\*

GAUNTLET-TYPE RUBBER GLOVES, CHEMICAL RESISTANT APRON

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION\*\*\*

SPLASH PROOF CHEMICAL GOGGLES. FACE SHIELD

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS\*\*\*

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

DO NOT FREEZE. IF FROZEN, THAW AND MIX COMPLETELY PRIOR TO USE

HANDLING INSTRUCTIONS\*\*\*

ALKALINE. CORROSIVE (SKIN/EYES). DO NOT MIX WITH ACIDIC MATERIAL.

\*\*\*\*\*  
THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD  
\*\*\*\*\*

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY

...FDA(21CFR): ALL INGREDIENTS IN THIS PRODUCT ARE AUTHORIZED FOR USE AS BOILER WATER ADDITIVES WHERE THE STEAM PRODUCED MAY CONTACT FOOD.

...USDA FEDERALLY INSPECTED MEAT AND POULTRY PLANTS- AUTHORIZED CAT.:  
SEC. G1, G6, G5

...CLEARANCE FOR POTABLE WATER USE:

EPA UP TO 20PPM-ALSO OHIO

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

157 GALLONS DUE TO SODIUM HYDROXIDE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: D002-CORROSIVE(PH)

...DOT HAZARD/UN# /ER GUIDE# IS: CORROSIVE TO SKIN UN1824/#60

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE

...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: NONE

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE) AND DELAYED(CHRONIC)

NFPA/HMIS : HEALTH - 3 ; FIRE - 0 ; REACTIVITY - 0 ; SPECIAL - CORR ; PE - D

BETZ ENTEC INC  
200 WITMER ROAD  
HORSHAM, PA 19044

WED, JUL 8, 1992

09015  
T R W  
Fastener Division  
120 Roger Street  
Cambridge , MA 02142

Attn: Director of Purchasing

MATERIAL SAFETY DATA SHEETS

Dear Customer:

Thank you for your recent order of a Betz Entec product(s). In compliance with the OSHA Hazard Communication Standard (29 CFR 1910.1200), a Material Safety Data Sheet (MSDS) is enclosed. The standard requires that the MSDS be available to personnel who might come in contact with this product, therefore, please route this information to the correct areas within your organization.

Betz Entec is fully committed to the stewardship of its many product lines and to the full disclosure of any available safety data. The protection of health and safety in the workplace and surrounding community, and the protection of the environment in which we all live and work requires dedication and team effort. Betz Entec appreciates being part of your team and will always strive to be equal to the trust you have placed in us.

Should you have any questions about the contents of this MSDS, please contact Loretta Geubtner at 215-674-9200, extension 269.

Very truly yours,

BETZ ENTEC, INC.

Enclosures:

Chemical Products:  
725



BETZ ENTEC, INC  
200 WITMER ROAD  
HORSHAM, PA 19044  
(215) 674-9200

RECEIVED

JUN - 3 1992

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 1-800-877-1940

PRODUCT : BETZ ENTEC 733  
MASS. REG.#

(PAGE 1 OF 3)  
EFFECTIVE DATE 02-16-91  
PRINTED: 06-03-92

PRODUCT APPLICATION : OXYGEN SCAVENGER.

## -----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION. FOR MASSACHUSETTS, THE PERCENT OF HAZARDOUS INGREDIENT IN THE FORMULATION IS INDICATED BELOW.

SODIUM SULFITE\*\*\*CAS#7757-83-7;MODERATE SKIN AND EYE IRRITANT;  
PEL/TLV:NONE.

## -----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: 5% SOL.	(APPROX.) 10.0	ODOR: NONE
FL.PT.(DEG.F): >200	SETA(CC)	SP.GR.(70F)OR DENSITY: 90LBS/CU.FT.
VAPOR PRESSURE(mmHG): NA		VAPOR DENSITY(AIR=1): NA
VISC cps70F: NO		%SOLUBILITY(WATER): 50
EVAP.RATE: NA	WATER=1	APPEARANCE: WHITE
PHYSICAL STATE: POWDER		FREEZE POINT(DEG.F): NA

## -----SECTION 3-----REACTIVITY DATA-----

STABLE. BETZ TANK CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

## MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: BETZ ENTEC 733

## -----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE

MODERATELY IRRITATING. POTENTIAL SKIN SENSITIZER.MAY CAUSE DERMATITIS

ACUTE EYE EFFECTS \*\*\*

MODERATELY IRRITATING TO THE EYES

ACUTE RESPIRATORY EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE

DUSTS CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE\*\*\*

PROLONGED OR REPEATED EXPOSURE MAY CAUSE PRIMARY IRRITANT DERMATITIS AND/OR SKIN SENSITIZATION.

MEDICAL CONDITIONS AGGRAVATED \*\*\*

NOT KNOWN

SYMPTOMS OF EXPOSURE \*\*\*

MAY CAUSE REDNESS OR ITCHING OF SKIN, TEARING AND PAIN IN EYES(DIRECT CONTACT);MAY CAUSE SEVERE ALLERGIC RESPONSES(HIVES,BRONCHOCONSTRICTION) IN HYPERSENSITIVE INDIVIDUALS.

## -----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT\*\*\*

REMOVE CONTAMINATED CLOTHING.WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT\*\*\*

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE\*\*\*

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR.APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION\*\*\*

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM DILUTE CONTENTS OF STOMACH.INDUCE VOMITING BY ONE OF THE STANDARD METHODS.IMMEDIATELY CONTACT A PHYSICIAN

## -----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS\*\*\*

VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.SWEEP UP AND PLACE IN WASTE DISPOSAL CONTAINER.

SPILL RESIDUE MAY BE NEUTRALIZED WITH 3% HYDROGEN PEROXIDE SOLUTION

DISPOSAL INSTRUCTIONS\*\*\*

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT(AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS\*\*\*

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS(FULL FACE-PIECE TYPE).PROPER FIRE EXTINGUISHING MEDIA: DRY CHEMICAL,CARBON DIOXIDE,FOAM OR WATER

## MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: BETZ ENTEC 733

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----  
 USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE  
 RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.  
 VENTILATION PROTECTION\*\*\*

ADEQUATE VENTILATION TO MAINTAIN DUST CONCENTRATIONS BELOW THE EXPOSURE  
 LIMIT OF 10MG/M3(PEL/TLV) FOR NUISANCE DUSTS.

RECOMMENDED RESPIRATORY PROTECTION\*\*\*

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,  
 USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION\*\*\*

RUBBER GLOVES

WASH OFF AFTER EACH USE.REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION\*\*\*

AIRTIGHT CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----  
 STORAGE INSTRUCTIONS\*\*\*

KEEP DRUMS &amp; PAILS CLOSED WHEN NOT IN USE.

KEEP DRY

HANDLING INSTRUCTIONS\*\*\*

NORMAL CHEMICAL HANDLING

\*\*\*\*\*  
 THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD  
 \*\*\*\*\*

## APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE  
 EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.  
 ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY  
 ...FDA(21CFR):ALL INGREDIENTS IN THIS PRODUCT ARE AUTHORIZED FOR USE AS BOILER  
 WATER ADDITIVES WHERE THE STEAM PRODUCED MAY CONTACT FOOD.  
 ...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:  
 NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE  
 IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD/UN#/ER GUIDE# IS: NOT APPLICABLE

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE

...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: NONE

...SARA SECTION 312 HAZARD CLASS: DELAYED(CHRONIC)

NFPA/HMIS : HEALTH - 2 ; FIRE - 0 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - B

BETZ ENTEC, INC  
200 WITMER ROAD  
HORSHAM, PA 19044  
(215) 674-9200

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 1-800-877-1940

PRODUCT : BETZ ENTEC 748  
MASS. REG.#

(PAGE 1 OF 3)  
EFFECTIVE DATE 02-16-91  
PRINTED: 01-31-92

REVISIONS TO SECTIONS: 1,3,APPENDIX

PRODUCT APPLICATION : CONDENSATE RETURN LINE TREATMENT.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION. FOR MASSACHUSETTS, THE PERCENT OF HAZARDOUS INGREDIENT IN THE FORMULATION IS INDICATED BELOW.

CYCLOHEXYLAMINE\*\*\*CAS#108-91-8;FLAMMABLE;CORROSIVE;REPRODUCTIVE TOXIN;  
TOXIC;PEL/TLV:10PPM. ( 16.0-20.0% )

DIETHYLAMINOETHANOL\*\*\*(DEAE);CAS#100-37-8;COMBUSTIBLE LIQUID;IRRITANT(EYES  
AND SKIN);PEL/TLV:10PPM(SKIN). ( 21.0-30.0% )

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 12.5	ODOR: AMINE
FL.PT.(DEG.F): 145	SETA(CC)	SP.GR.(70F)OR DENSITY: 0.972
VAPOR PRESSURE(mmHG): ND		VAPOR DENSITY(AIR=1): ND
VISC cps@70F: 18.7		%SOLUBILITY(WATER): 100
EVAP.RATE: <1 ETHER=1		APPEARANCE: COLORLESS
PHYSICAL STATE: LIQUID		FREEZE POINT(DEG.F): 15

-----SECTION 3-----REACTIVITY DATA-----

TRW-01064

STABLE.MAY REACT WITH ACIDS.DO NOT CONTAMINATE. BETZ TANK CLEAN-OUT  
CATEGORY 'C'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES

PRODUCT: BETZ ENTEC 748

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE

CORROSIVE TO SKIN.ABSORBED BY SKIN.POTENTIAL SKIN SENSITIZER.

ACUTE EYE EFFECTS \*\*\*

CORROSIVE TO THE EYES

ACUTE RESPIRATORY EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE

IRRITATION OF UPPER RESPIRATORY TRACT.PROLONGED EXPOSURE MAY CAUSE  
DIZZINESS AND HEADACHE

CHRONIC EFFECTS OF OVEREXPOSURE\*\*\*

PROLONGED OR REPEATED OVEREXPOSURES MAY CAUSE NERVOUS SYSTEM TOXICITY,MAY  
CAUSE REPRODUCTIVE SYSTEM TOXICITY AND/OR MAY CAUSE CNS DEPRESSION.

MEDICAL CONDITIONS AGGRAVATED \*\*\*

NOT KNOWN

SYMPTOMS OF EXPOSURE \*\*\*

INHALATION MAY CAUSE LIGHTHEADEDNESS,SLURRED SPEECH,NAUSEA AND  
VOMITING(PULMONARY EDEMA MAY RESULT);SKIN CONTACT CAN CAUSE SEVERE  
IRRITATION OR BURNS.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS \*\*\*

MAY BE TOXIC IF ORALLY INGESTED OR ABSORBED THROUGH SKIN.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT\*\*\*

REMOVE CLOTHING.WASH AREA WITH LARGE AMOUNTS OF SOAP SOLUTION OR WATER  
FOR 15 MIN.IMMEDIATELY CONTACT PHYSICIAN

EYE CONTACT\*\*\*

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A  
PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE\*\*\*

REMOVE VICTIM FROM CONTAMINATED AREA.APPLY NECESSARY FIRST AID  
TREATMENT.IMMEDIATELY CONTACT A PHYSICIAN.

INGESTION\*\*\*

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM  
DO NOT INDUCE VOMITING.IMMED.CONTACT PHYSICIAN.DILUTE CONTENTS OF  
STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL,DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS\*\*\*

VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB  
ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE  
CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL,  
SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.  
REMOVE IGNITION SOURCES.FLUSH AREA WITH WATER.SPREAD  
SAND/GRIT.

DISPOSAL INSTRUCTIONS\*\*\*

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY  
SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A  
PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT  
PRODUCT(AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS\*\*\*

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING  
APPARATUS(FULL FACE-PIECE TYPE).PROPER FIRE EXTINGUISHING MEDIA:  
DRY CHEMICAL,CARBON DIOXIDE,FOAM OR WATER

PRODUCT: BETZ ENTEC 748

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION\*\*\*

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS  
RECOMMENDED RESPIRATORY PROTECTION\*\*\*

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,  
USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGES.

RECOMMENDED SKIN PROTECTION\*\*\*

GAUNTLET-TYPE NEOPRENE GLOVES, CHEMICAL RESISTANT APRON

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION\*\*\*

SPLASH PROOF CHEMICAL GOGGLES. FACE SHIELD

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS\*\*\*

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

STORE IN COOL VENTILATED LOCATION. STORE AWAY FROM OXIDIZERS

HANDLING INSTRUCTIONS\*\*\*

COMBUSTIBLE. DO NOT USE AROUND SPARKS OR FLAMES. BOND CONTAINERS  
DURING FILLING OR DISCHARGE WHEN PERFORMED AT TEMPERATURES AT OR  
ABOVE THE PRODUCT FLASH POINT.

\*\*\*\*\*  
THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD  
\*\*\*\*\*

APPENDIX: REGULATORY INFORMATION

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ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY  
...FDA(21CFR): ALL INGREDIENTS IN THIS PRODUCT ARE AUTHORIZED FOR USE AS BOILER  
WATER ADDITIVES WHERE THE STEAM PRODUCED MAY CONTACT FOOD.

...USDA FEDERALLY INSPECTED MEAT AND POULTRY PLANTS- AUTHORIZED CAT.:

SEC. 66

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

6 PINTS(CYCLOHEXYLAMINE)

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE  
IDENTIFICATION NUMBER IS: D002=CORROSIVE (PH)

...DOT HAZARD/UN# /ER GUIDE# IS: CORROSIVE TO SKIN. COMBUSTIBLE UN1760/#60

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE

...SARA SECTION 302 CHEMICALS: CYCLOHEXYLAMINE(108-91-8) ;

...SARA SECTION 313 CHEMICALS: NONE

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE) AND DELAYED(CHRONIC)

NFPA/HMIS : HEALTH - 3 ; FIRE - 2 ; REACTIVITY - 0 ; SPECIAL - CORR ; PE - D

BETZ ENTEC, INC  
200 WITMER ROAD  
HORSHAM, PA 19044  
(215) 674-9200

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 1-800-877-1940

PRODUCT : BETZ ~~ENTEC-788~~ -  
MASS. REG.#

(PAGE 1 OF 3)  
EFFECTIVE DATE 02-16-91  
PRINTED: 09-23-94

PRODUCT APPLICATION : ION EXCHANGE RESIN CLEANER.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION. FOR MASSACHUSETTS, THE PERCENT OF HAZARDOUS INGREDIENT IN THE FORMULATION IS INDICATED BELOW.

CITRIC ACID\*\*\*CAS#77-92-9;EYE IRRITANT;PEL/TLV:NONE.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 0.9	ODOR: PUNGENT, VINEGAR-LIKE
FL.PT.(DEG.F): >200	SETA(CC)	SP.GR.(70F)OR DENSITY: 1.187
VAPOR PRESSURE(mmHG): 18		VAPOR DENSITY(AIR=1): <1
VISC cps70F: 26		%SOLUBILITY(WATER): 100
EVAP.RATE: <1	ETHER=1	APPEARANCE: COLORLESS
PHYSICAL STATE: LIQUID		FREEZE POINT(DEG.F): 18

-----SECTION 3-----REACTIVITY DATA-----

STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE.BETZ TANK  
CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

## MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: BETZ ENTEC-450-

## -----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS \*\*\* PRIMARY ROUTE OF EXPOSURE

SLIGHTLY IRRITATING TO THE SKIN

ACUTE EYE EFFECTS \*\*\*

MODERATELY IRRITATING TO THE EYES

ACUTE RESPIRATORY EFFECTS \*\*\*

MISTS/AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE\*\*\*

NO EVIDENCE OF POTENTIAL CHRONIC EFFECTS.

MEDICAL CONDITIONS AGGRAVATED \*\*\*

NOT KNOWN

SYMPTOMS OF EXPOSURE \*\*\*

MAY CAUSE REDNESS OR ITCHING OF SKIN.

## -----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT\*\*\*

REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT\*\*\*

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE\*\*\*

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION\*\*\*

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM  
DILUTE CONTENTS OF STOMACH. INDUCE VOMITING BY ONE OF THE STANDARD METHODS. IMMEDIATELY CONTACT A PHYSICIAN

## -----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS\*\*\*

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.  
FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS\*\*\*

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS) -

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS\*\*\*

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA: DRY CHEMICAL/CO2/FOAM OR WATER. SLIPPERY CONDITION. USE SAND/GRIT



## MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: BETZ ENTEC-750

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----  
USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE  
RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.  
VENTILATION PROTECTION\*\*\*

ADEQUATE VENTILATION

RECOMMENDED RESPIRATORY PROTECTION\*\*\*

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,  
USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION\*\*\*

RUBBER GLOVES

WASH OFF AFTER EACH USE.REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION\*\*\*

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----  
STORAGE INSTRUCTIONS\*\*\*

KEEP DRUMS &amp; PAILS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING

HANDLING INSTRUCTIONS\*\*\*

ACIDIC.DO NOT MIX WITH ALKALINE MATERIAL.

\*\*\*\*\*  
THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD  
\*\*\*\*\*

## APPENDIX: REGULATORY INFORMATION

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EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.  
ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY

...USDA FEDERALLY INSPECTED MEAT AND POULTRY PLANTS- AUTHORIZED CAT.:

SEC.G7

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE  
IDENTIFICATION NUMBER IS: D002-CORROSIVE(PH)

...DOT HAZARD/UN#/ER GUIDE# IS: NOT APPLICABLE

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE

...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: NONE

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE)

...MICHIGAN CRITICAL MATERIALS: NONE

NFPA/HMIS : HEALTH - 1 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - ACID ; PE - B



ENTHONE-OMI  
(NORTH AMERICA), INC.

MATERIAL SAFETY DATA SHEET

717  
**ENTEK® CU-56**

P.O. BOX 1900  
NEW HAVEN, CT 06508

EMERGENCY PHONE NUMBERS				PRODUCT CODE#: 2806	
PLANTS	203-934-8611	(8:30am-5pm EST)		DATE ISSUED:	2/9/89
	312-598-3210	(8:30am-5pm CST)		SUPERCEDES:	4/30/87
MFSA	313-644-5626	(24 hours)		PREPARER:	F.R. Hirtler
CHEMTREC	800-424-9300	(Transportation)			

**II. HAZARDOUS INGREDIENTS**

COMPONENT	COMMON NAME	CAS NO.	OSHA-PEL	ACGIH-TLV	%
Methanol	Methyl alcohol	67-56-1	260 mg/m3	260 mg/m3	>40
Benzotriazole		95-14-7	NI*	NI*	<5
Sodium m-Nitrobenzenesulfonate		127-68-4	NI	NI	<5
Water		7732-18-5	NI	NI	>45

\*Recommended: PEL: 15 mg/m3; TLV: 10 mg/m3

**III. PHYSICAL PROPERTIES**

SPECIFIC GRAVITY (WATER =1)	0.950	BOILING POINT, °F	172
EVAP.RATE (BUTYL ACETATE=1)	NI	MELTING POINT, °F	20
VAPOR PRESSURE, mmHg	55	SOLUBILITY IN WATER	complete
VAPOR DENSITY (AIR=1)	NI	APPEARANCE	light yellow liquid
pH (AS-IS)	7.4	ODOR	alcoholic

**IV. FIRE AND EXPLOSION HAZARD DATA**

FLASH POINT, °F	100 (O.C.); 80 (C.C.)	FLAMMABLE LIMITS (AIR)	NI	LEL	NI	UEL
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EXTINGUISHING MEDIA

<input type="checkbox"/> Not	<input checked="" type="checkbox"/> Water fog	<input checked="" type="checkbox"/> Carbon	<input checked="" type="checkbox"/> Dry	<input checked="" type="checkbox"/> Alcohol	<input type="checkbox"/> Foam	<input type="checkbox"/> Sand or
Combustible	or spray	Dioxide	Chemical	Foam		Earth

SPECIAL FIRE FIGHTING PROCEDURES

Wear NIOSH approved full protective clothing and self-contained breathing apparatus. Keep containers cool to prevent rupture and release of material.

UNUSUAL FIRE AND EXPLOSION HAZARDS

At high temperatures may release toxic oxides of nitrogen and sulfur.

**V. HEALTH HAZARD DATA****EFFECTS OF ACUTE EXPOSURE:**

**INHALATION:** Dizziness, drowsiness, disturbance of vision.

**INGESTION:** May be fatal and can cause blindness.

**SKIN:** Can cause irritation.

**EYES:** Can cause severe irritation, damage to eyes.

**EFFECTS OF CHRONIC EXPOSURE:**

Prolonged exposure may lead to impairment of vision.

**CARCINOGEN:** Not listed by NTP, IARC, OSHA

**REFERENCE:****EMERGENCY AND FIRST AID PROCEDURES**

**INHALATION:** Remove person from contaminated area. If breathing has stopped, resuscitate and administer oxygen if available.  
Seek immediate medical attention.

**INGESTION:** Never give anything by mouth to an unconscious person, obtain immediate medical attention. If vomiting occurs spontaneously, keep airway clear. If swallowed give large amounts of water and INDUCE VOMITING.  
Seek immediate medical attention.

**SKIN:** Immediately wash contaminated skin with plenty of water for 15 minutes. Remove contaminated clothing and footwear. Wash clothing before reuse. Discard footwear if it cannot be decontaminated.  
Seek immediate medical attention.

**EYES:** Immediately flush eyes with plenty of water for at least 15 minutes holding lids apart to ensure flushing of entire surface. Washing eyes within several seconds of exposure is essential to minimize damage.  
Seek immediate medical attention.

**VI. PRECAUTIONS FOR SAFE HANDLING AND USE****SPILL PROCEDURES:**

Protect area from sources of ignition. Do not breathe mist or vapors. Wear protective equipment. Contain spill and soak up with suitable material such as sand, earth, then transfer to clean steel drum and cover. Dispose of in accordance with Local, State and Federal regulations.

**STORAGE AND HANDLING PRECAUTIONS:**

Store in cool dry place; avoid heat, sparks and open flame.

**ADDITIONAL INFORMATION:**

Use explosion proof electrical equipment.

**VII. CONTROL MEASURES**

**VENTILATION:** Local exhaust recommended.

**RESPIRATOR:** Use NIOSH approved respirator when air concentration is greater than the TLV or PEL.  
Use cartridge filter for organic vapors.

**EYE PROTECTION:** ☐ Safety glasses ☒ Chemical safety goggles ☒ Face shield

**PROTECTIVE GLOVES:** ☒ Neoprene ☒ Natural rubber Other:

**OTHER PROTECTIVE CLOTHING OR EQUIPMENT:**

Chemically resistant coveralls, hat, and shoes or boots.

**WORK/HYGENIC PRACTICES:**

Emergency eye wash and safety shower should be available. Wash thoroughly after handling.

**ADDITIONAL INFORMATION:**

For waste disposal of operating solutions consult Enthone Waste Disposal Procedures. For major spills consult Enthone for disposal assistance. Dispose of in accordance with Local, State, and Federal regulations.

CAS = Chemical Abstract Service

NI = No relevant information available

NA = Not applicable

Trade Secret = Claimed as allowed under 29 CFR 1910.1200

PEL = OSHA Permissible Exposure Limit

TLV = ACGIH Threshold Limit Value

NTP = National Toxicology Program

IARC = Int'l Agency for Research on Cancer

**VIII. REACTIVITY DATA**

<input checked="" type="checkbox"/> Stable	CONDITIONS TO AVOID: Stable under normal conditions. See Incompatibility information.			
<input type="checkbox"/> Unstable				
INCOMPATABILITY (Materials to avoid): Alkali metals, concentrated nitric and sulfuric acids, acyl chlorides.				
HAZARDOUS DECOMPOSITION PRODUCTS: Toxic carbon monoxide, carbon dioxide, oxides of nitrogen and sulfur, also nitroaromatics.				
HAZARDOUS POLYMERIZATION	<table border="1"><tr><td>May occur</td><td rowspan="2">CONDITIONS TO AVOID: NA</td></tr><tr><td><input checked="" type="checkbox"/> Will not occur</td></tr></table>	May occur	CONDITIONS TO AVOID: NA	<input checked="" type="checkbox"/> Will not occur
May occur	CONDITIONS TO AVOID: NA			
<input checked="" type="checkbox"/> Will not occur				

**IX. ADDITIONAL INFORMATION**

This product contains one or more chemicals which are subject to the reporting requirements of SARA, TITLE III, Section 313 (40 CFR 372). The chemical(s) are listed in Section II, HAZARDOUS INGREDIENTS, along with the CAS (Chemical Abstract Service) # and the ingredient concentration which will be within 5% of the figure stated. This notice must be included in any subsequent copying of this MSDS.

This Material Safety Data Sheet may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Enthone, Inc. furnishes the data contained herein in good faith at customer's request without liability or legal responsibility for same whatsoever, and no warranty or guarantee, express or implied, is made with respect to such data; nor does Enthone, Inc. grant permission, recommendation, or inducement to infringe any patent whether owned by Enthone or others. The data is offered solely for your information and consideration. Since conditions of use are beyond Enthone's control, user assumes all responsibility and risk.



ENTHONE-OMI  
(NORTH AMERICA), INC.

MATERIAL SAFETY DATA SHEET

ENSTRIP 110A

P.O. BOX 1900  
NEW HAVEN, CT 06508

EMERGENCY PHONE NUMBERS

PLANTS 203-934-8611 (8:30am-5pm EST)  
312-598-3210 (8:30am-5pm CST)  
MFSA 313-644-5626 (24 hours)  
CHEMTREC 800-424-9300 (Transportation)

PRODUCT CODE#: 2584  
DATE ISSUED: 6/3/87  
SUPERCEDES: 6/86  
PREPARER: J. A. Zehnder

II. HAZARDOUS INGREDIENTS

COMPONENT	COMMON NAME	CAS NO.	OSHA-PEL	ACGIH-TLV	%
Sulfamic Acid		5329-14-6	NI	NI	>95

III. PHYSICAL PROPERTIES

SPECIFIC GRAVITY (WATER =1)	2.126	BOILING POINT, °F	NA
EVAP.RATE (BUTYL ACETATE=1)	NA	MELTING POINT, °F	401, decomposes
VAPOR PRESSURE, mmHg	NA	SOLUBILITY IN WATER	ca. 21 g/100 g water at 20°C
VAPOR DENSITY (AIR=1)	NA	APPEARANCE	white powder
pH (AS IS)	NA	ODOR	none

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT, °F	None	FLAMMABLE LIMITS (AIR)	NA	LEL	NA	UEL
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EXTINGUISHING MEDIA

☒ Not Combustible ☐ Water fog or spray ☐ Carbon Dioxide ☐ Dry Chemical ☐ Alcohol Foam ☐ Foam ☐ Sand or Earth

SPECIAL FIRE FIGHTING PROCEDURES

None required

UNUSUAL FIRE AND EXPLOSION HAZARDS

None known.

**V. HEALTH HAZARD DATA****EFFECTS OF ACUTE EXPOSURE:**

**INHALATION:** Dust can cause irritation of nose, throat and lungs.

**INGESTION:** Can cause severe irritation to mouth, throat, esophagus, and stomach.

**SKIN:** Can cause irritation.

**EYES:** Can cause severe irritation, damage to eyes.

**EFFECTS OF CHRONIC EXPOSURE:**

None known.

**CARCINOGEN:** Not listed NTP, IARC, OSHA

**REFERENCE:****EMERGENCY AND FIRST AID PROCEDURES**

**INHALATION:** Remove person from contaminated area. If breathing has stopped, resuscitate and administer oxygen if available. Seek immediate medical attention.

**INGESTION:** Never give anything by mouth to an unconscious person, obtain immediate medical attention. If vomiting occurs spontaneously, keep airway clear. If swallowed DO NOT INDUCE VOMITING, give large amounts of water. Seek immediate medical attention.

**SKIN:** Immediately wash contaminated skin with plenty of water for 15 minutes. Remove contaminated clothing and footwear. Wash clothing before reuse. Discard footwear if it cannot be decontaminated. Seek immediate medical attention.

**EYES:** Immediately flush eyes with plenty of water for at least 15 minutes holding lids apart to ensure flushing of entire surface. Washing eyes within several seconds of exposure is essential to minimize damage. Seek immediate medical attention.

**VI. PRECAUTIONS FOR SAFE HANDLING AND USE****SPILL PROCEDURES:**

Avoid contact with skin, eyes and clothing. Wear protective equipment (see Section VII). Do not breathe mist or vapors. Contain spill and soak up in suitable absorbent. Shovel into plastic lined steel containers. Dilute residual material with copious amounts of water and neutralize. Dispose of in accordance with Local, State and Federal regulations.

**STORAGE AND HANDLING PRECAUTIONS:**

Store in a cool, dry place. Keep away from alkalies and oxidizers. Loosen cover cautiously when opening.

**ADDITIONAL INFORMATION:**

Wash thoroughly after handling.

**VII. CONTROL MEASURES**

**VENTILATION:** Local exhaust recommended.

**RESPIRATOR:** Use NIOSH approved respirator when air concentration is greater than the TLV or PEL.  
Use cartridge filter for dusts.

**EYE PROTECTION:** ☐ Safety glasses ☒ Chemical safety goggles ☒ Face shield

**PROTECTIVE GLOVES:** ☒ Neoprene ☒ Natural rubber Other:

**OTHER PROTECTIVE CLOTHING OR EQUIPMENT:**

Chemically resistant coveralls, hat, and shoes or boots.

**WORK/HYGENIC PRACTICES:**

Emergency eye wash and safety shower should be available. Wash thoroughly after handling.

**ADDITIONAL INFORMATION:**

For waste disposal of operating solutions consult Enthone Waste Disposal Procedures. For major spills consult Enthone for disposal assistance. Dispose of in accordance with local, state, and federal regulations.

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TLV = ACGIH Threshold Limit Value

NTP = National Toxicology Program

IARC = Int'l Agency for Research on Cancer

TRW-01076

0908-2444





DEPT. 217

**MATERIAL SAFETY DATA SHEET**  
**FOR COATINGS, RESINS AND RELATED MATERIALS**

DATE OF PREP.

PRODUCT 4292 SERIES

Section I

MANUFACTURER'S NAME RAFFI AND SWANSON, INC.

REET ADDRESS 100 Eames Street

CITY, STATE, AND ZIP CODE Wilmington, Mass. 01887

ERGENCY TELEPHONE NO. 617-933-4200

MANUFACTURER'S CODE IDENTIFICATION

ODUCT CLASS Solvent Based Compound

4292 Enamel - Various Colors

ADE NAME N/A

Information on the composition of Raffi and Swanson, Inc. products is confidential proprietary information and is provided solely to aid in safe handling of these materials. Use or disclosure for any other purpose is expressly forbidden.

Section II — HAZARDOUS INGREDIENTS

INGREDIENT	PERCENT	TLV		LEL	VAPOR PRESSURE
		PPM	mg/M <sup>3</sup>		
Xylene	55 ± 5	100		1%	Less than 10 mm Hg
n-Butanol	10 ± 5	100		1.4%	4.3

Section III — PHYSICAL DATA

BOILING RANGE 243-291°F.

VAPOR DENSITY ☒ HEAVIER ☐ LIGHTER, THAN AIR

EVAPORATION RATE ☐ FASTER ☒ SLOWER, THAN ETHER

PERCENT VOLATILE BY VOLUME

65 ± 5

WEIGHT PER GALLON

8.0 to 10.0 lb.

Section IV — FIRE AND EXPLOSION HAZARD DATA

FLAME CATEGORY Not regulated combustible greater than 80°F.

FLASH POINT 81°F. lowest flashing component

LEL 1%

EXTINGUISHING MEDIA

Carbon Dioxide, Dry Chemical or Foam.

USUAL FIRE AND EXPLOSION HAZARDS

Keep containers tightly closed. Isolate from heat, sparks and open flame. Do not apply to hot surfaces. Closed containers may explode when exposed to extreme heat.

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective. Water may be used to cool closed containers.

TRW-01078

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Section V — HEALTH HAZARD DATA

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THRESHOLD LIMIT VALUE See Section II

OF OVEREXPOSURE

**INHALATION:** Vapor irritating to eyes, nose, and throat. Can cause headache, dizziness, nausea, weakness, loss of consciousness.

**EYE CONTACT:** Burning and irritation.

EMERGENCY AND FIRST AID PROCEDURES

**INHALATION:** Provide fresh air. Give artificial respiration or oxygen if necessary. Call physician.

**EYE CONTACT:** Lubricate eye with C. P. Castor Oil or wash with large amounts of water. SEE PHYSICIAN.

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Section VI — REACTIVITY DATA

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ABILITY ☐ UNSTABLE ☒ STABLE

CONDITIONS TO AVOID

COMPATIBILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION ☐ MAY OCCUR ☒ WILL NOT OCCUR

CONDITIONS TO AVOID

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Section VII — SPILL OR LEAK PROCEDURES

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STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Avoid breathing vapors. Ventilate area. Remove with inert absorbent and non-sparking tools.

A. DISPOSAL METHOD Incinerate in approved facility. Solid residue to sanitary land fill. Dispose in accordance with local, state, and federal regulations. Do not incinerate closed containers.

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Section VIII — SPECIAL PROTECTION INFORMATION

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RESPIRATORY PROTECTION

Avoid breathing concentrated vapors or overspray particles if sprayed. In confined or poorly ventilated areas, use Bureau of Mines approved mask with chemical canister or supplied air.

VENTILATION

Provide general mechanical ventilation or local exhaust ventilation sufficient to keep TLV of vapors below 100 PPM.

PROTECTIVE GLOVES Use for prolonged or repeated contact.

FACE PROTECTION Safety goggles or face shield where splashes can occur.

OTHER PROTECTIVE EQUIPMENT

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Section IX — SPECIAL PRECAUTIONS

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PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

**FLAMMABLE.** Keep in closed containers. Avoid sparks or flame when handling. Can be stored under ambient conditions.

OTHER PRECAUTIONS

Avoid prolonged contact with the skin.

TRW-01079

MATERIAL SAFETY DATA SHEET

COOK'S INDUSTRIAL LUBRICANTS  
5 NORTH STILES STREET  
LINDEN, N. J. 07036

REVISION DATE  
08-MAR-90

DATE ISSUED  
09-AUG-90

IDENTIFICATION AND EMERGENCY INFORMATION

COOK'S PRODUCT NAME:  
EPOXIDIZED SOYBEAN OIL

COOK'S PRODUCT #:  
300020

CHEMICAL NAME:  
Chlorine scavenger

CAS #'S  
8013.07.8

PRODUCT APPEARANCE AND ODOR:  
Amber liquid, petroleum odor

CHEMICAL FAMILY:  
Petroleum hydrocarbon

SYNONYMS:  
Flexol plasticizer EPO

EMERGENCY TELEPHONE:  
(201) 862-2500

COMPONENTS AND HAZARD INFORMATION

COMPONENTS: W/W HAZARD DATA (TLV, LD50, LC50, ETC.):

EPOXIDIZED SOYBEAN OIL  
CAS #'S 8013.07.8

NOT ESTABLISHED

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS):

Health	Flammability	Reactivity	Basis
1	1	0	Recommended by Exxon

TRANSPORTATION INFORMATION

TRANSPORTATION INCIDENT INFORMATION:

ICC: Compound or lubricant. Metal cutting, drawing or drilling.  
Dry, liquid or paste. NOI

EMERGENCY FIRST AID

EYE CONTACT:

If splashed into the eyes, flush with clear water for 15 minutes or until irritation subsides. If irritation persists, call a physician.

SKIN CONTACT:

In case of skin contact, remove contaminated clothing and wash skin thoroughly with soap and water.

INHALATION:

Vapor pressure is very low. Vapor inhalation under ambient conditions is normally not a problem. If overcome by vapor from hot product, immediately remove from exposure and call a physician. If breathing is irregular or has stopped, start resuscitation; administer oxygen if available. If overexposure

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**EMERGENCY FIRST AID**

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to oil mist, remove from further exposure until excessive oil mist condition subsides.

**INGESTION:**

If ingested, do not induce vomiting. Call a physician immediately.

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**FIRE AND EXPLOSION HAZARD INFORMATION**

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**FLASH POINT (MINIMUM):**

198°C (390°F) Test method: COC

**AUTOIGNITION TEMPERATURE:**

N/E

**NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) - HAZARD IDENTIFICATION:**

Health	Flammability	Reactivity	Basis
1	1	0	Recommended by Exxon

**FLAMMABLE OR EXPLOSIVE LIMITS (approximate percent by volume in air):**

Estimated values: lower 1% upper 6%

**EXTINGUISHING MEDIA AND FIRE FIGHTING PROCEDURES:**

Foam, water spray (fog), dry chemical, carbon dioxide and vaporizing liquid type extinguishing agents may all be suitable for extinguishing fires involving this type product, depending on size or potential size of fire and circumstances related to the situation. Plan fire protection and response strategy through consultation with local fire protection authorities or appropriate specialists.

The following procedures for this type of product are based on the recommendations in the National Fire Protection Association's "Fire Protection Guide on Hazardous Materials", Eighth Edition (1984):

Use water spray, dry chemical, foam, or carbon dioxide. Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water froth may be used to flush spills away from exposure. Minimize breathing gases, vapor, fumes, or decomposition products. Use supplied-air breathing equipment for enclosed or confined spaces or as otherwise needed.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:**

n/a

**"EMPTY" CONTAINER WARNING:**

Empty containers retain residue (liquid or vapor) and can be dangerous. DO NOT PRESSURIZE, WELD, CUT BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged, and returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. For work on tanks refer to Occupational Safety and Health Administration regulations, ANSI Z49.1, and other governmental and industrial references pertaining to cleaning, repairing, welding, or other contemplated operations.

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**HEALTH AND HAZARD INFORMATION**

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**EXPOSURE LIMIT FOR TOTAL PRODUCT:**

5 mg/cubic meter for oil mist in air

**BASIS:**

OSHA Regulation 29 CFR 1910.1000

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**HEALTH AND HAZARD INFORMATION**

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**VARIABILITY AMONG INDIVIDUALS:**

Health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks which vary from person to person. As a precaution, exposure to liquids, vapors, mists, or fumes should be minimized.

**EFFECTS OF OVEREXPOSURE (Signs and symptoms of exposure):**

Prolonged or repeated skin contact with this product tends to remove skin oils possibly leading to irritation and dermatitis; however, based on human experience and available toxicological data, this product is judged to be neither a "corrosive" nor an "irritant" by OSHA criteria. Product contacting the eye may cause irritation.

Product has a low order of oral and dermal toxicity. Possible aspiration hazard. Induced vomiting may cause aspiration of product into the lungs. (See Emergency First Aid Section).

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**PHYSICAL DATA**

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The following data are approximate or typical values and should not be used for precise design purposes.

**Boiling Range:**

Decomposes

**Vapor Pressure:**

<0.01 mm Hg @ 20°C

**Specific Gravity (25°C/20°C):**

(Water = 1)

0.992

**Vapor Density (Air = 1):**

>0.01 mm Hg @ 20°C

**Molecular Weight:**

1000 'Approx'

**Percent Volatile by Volume:**

Negligible

**Evaporation Rate @ 1 atm. and 25°C**

(77°F) (n-butyl acetate = 1):

<0.1

**Solubility in Water @ 1 atm. and 25°C**

(77°F):

Negligible

**Pour, Congealing or Melting Point:**

-4°C (24°F)

**Freezing Point:**

n/e

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**REACTIVITY**

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This product is stable and will NOT react violently with water. Hazardous polymerization will not occur. Avoid contact with strong oxidants such as liquid chlorine, concentrated oxygen, sodium hypochlorite or calcium hypochlorite.

**Decomposition Products Under Fire Conditions:**

Fumes, smoke, carbon monoxide and other decomposition products, in case of complete combustion.

**Conditions to Avoid:**

Open flames.

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**TOXICITY**


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ORAL (Acute)	LD 50 > 5 g/kg (total body weight)
DERMAL (Acute)	LD 50 > 3.16 g/kg (total body weight)
EYE	N/E
INHALATION (Acute)	N/E
CHRONIC, SUBCHRONIC, ETC.	N/E

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Medical Conditions Aggravated by Exposure: Unknown

This product does NOT contain any ingredients identified as carcinogenic by IRAC, NTP, or OSHA.

SARA Section 313 Status: This material is not known to contain any chemicals on the SARA Section 313 list at a concentration greater than 1.0 percent or carcinogenic chemical on that list at a concentration greater than 0.1 percent.

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**SPILL OR LEAK PROCEDURES**


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**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:**

Keep product out of sewers and watercourses by diking or impounding. Absorb with sand or inert material. Sweep or scoop up and remove. Prevent spread of spill. Advise authorities if product has entered or may enter sewers, watercourses or extensive land areas. Assure conformity with local regulations.

WASTE DISPOSAL METHOD: (Consult federal, state, or local authorities for proper disposal procedures.)

Assure conformity with applicable disposal regulations. Dispose of absorbed material at an approved waste site or facility.

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**PROTECTION AND PRECAUTIONS**


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VENTILATION: (Always maintain below permissible exposure limits.)

Use local exhaust to capture vapor, mist or fumes, if necessary. Provide greater than 60 feet per minute hood face velocity for confined spaces. Provide ventilation sufficient to prevent exceeding recommended exposure limit or buildup of explosive concentrations of vapor in air.

RESPIRATORY PROTECTION: (Use only NIOSH approved equipment.)

Normally not needed at ambient temperatures. Use supplied air respiratory protection in confined or enclosed spaces, if needed. Use filter, dust, fume, or mist respirator type under misting conditions. Use can or cartridge gas or vapor respirator type under conditions exceeding TWA standard.

**PROTECTIVE GLOVES:**

Use chemical-resistant gloves, if needed, to avoid prolonged or repeated skin contact.

**FACE PROTECTION:**

Use splash goggles or face shield when eye contact may occur.

**OTHER PROTECTIVE EQUIPMENT:**

Use chemical-resistant apron or other impervious clothing, if needed, to avoid contaminating regular clothing which could result in prolonged or repeated skin contact.

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**PROTECTION AND PRECAUTIONS**

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**WORK PRACTICES/ENGINEERING CONTROLS:**

Keep containers closed when not in use. Do not handle near heat, sparks, flame, or strong oxidants.

**PERSONAL HYGIENE:**

Minimize breathing vapor, mist, or fumes. Avoid prolonged or repeated contact with skin. Remove contaminated clothing; launder or dry-clean before reuse. Remove contaminated shoes and thoroughly clean before reuse; discard if oil-soaked. Cleanse skin thoroughly after contact, before breaks and meals, and at end of work period. Product is readily removed from skin by waterless hand cleaners followed by washing thoroughly with soap and water.

-----  
PREPARED BY: Dave Townsend                      Product Safety Manager  
-----

THE ABOVE INFORMATION IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, SINCE DATA, SAFETY STANDARDS, AND GOVERNMENT REGULATIONS ARE SUBJECT TO CHANGE AND THE CONDITIONS OF HANDLING AND USE, OR MISUSE ARE BEYOND OUR CONTROL, SELLER MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. USER SHOULD SATISFY HIMSELF THAT HE HAS ALL CURRENT DATA RELEVANT TO HIS PARTICULAR USE.



SEP 19 1985

D. BORSUK

U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

## MATERIAL SAFETY DATA SHEET

## SECTION I

MANUFACTURER'S NAME WALTER M. MCKIM & SON, INC.		EMERGENCY TELEPHONE NO. 617-647-5560
ADDRESS 225 Riverview Avenue, Waltham, Massachusetts 02254		
CHEMICAL NAME AND SYNONYMS NA	TRADE NAME AND SYNONYMS 4-014-2 RESIN	
CHEMICAL FAMILY EPOXY	FORMULA na	

## SECTION II - INGREDIENTS

SECTION II - INGREDIENTS					
PAINT, PRESERVATIVES & SOLVENTS	%	TLV (Units)	ALLOYS & METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Bisphenol A based epoxy resin			CAS No. 25068-38-6	75	NA
Aliphatic Polyglycidyl Ether			CAS No. 68609-97-2	6	NA
Colloidal Silica, Synthetic			CAS No. 7631-86-9	3	200 mppcf
Carbon Black			CAS No. 1333-86-4	1	NA
Aluminosilicate Mineral			CAS No. 37244-96-5	15	NA

## SECTION III - PHYSICAL DATA

BOILING POINT (°F)	NA	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	1.26
VAPOR PRESSURE (mm Hg.)	NA	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR=1)	> 1	EVAPORATION RATE (_____ = 1)	NA
SOLUBILITY IN WATER	Insol.		
APPEARANCE AND ODOR Black Liquid. No distinctive odor			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used)	> 200° F Setflash	FLAMMABLE LIMITS	LOL NA	VOL NA
EXTINGUISHING MEDIA Foam, CO <sub>2</sub> , Dry Chemical, or Water Spray				
SPECIAL FIRE FIGHTING PROCEDURES Treat as Class B fire.				
UNUSUAL FIRE AND EXPLOSION HAZARDS Avoid excessive heat, sparks or open flames				

TRW-01085

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SECTION V — HEALTH HAZARD DATA		
THRESHOLD LIMIT VALUE	NA	
EFFECTS OF OVEREXPOSURE	ACUTE	CHRONIC
	Irritation of nose, throat and eyes if exposed to heated vapor	Can cause eye and skin irritation on prolonged or repeated contact
EMERGENCY & FIRST AID PROCEDURES		
Ingestion:	Give milk to drink. Do not induce vomiting.	
Inhalation:	Remove to fresh air	
Contact:	Wash eyes with water, Wash skin with soap and water	

SECTION VI — REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid) Uncontrolled mixing with amines or strong oxidizing agents			
HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide, aldehydes and acids			
HAZARDOUS POLYMERIZATION	MAY OCCUR	X	CONDITIONS TO AVOID See incompatibility Uncontrolled curing with hardener in masses greater than 2 inches thick.
	WILL NOT OCCUR		

SECTION VII — SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean all spills thoroughly. For small amounts, MEK or acetone can be used. For large spills, scrape up, then wash.	
WASTE DISPOSAL METHOD Consult local codes	

SECTION VIII — SPECIAL PROTECTION INFORMATION		
RESPIRATORY PROTECTION (Specify type) - NIOSH approved canister mask air hose or self contained breathing apparatus when used in confined areas.		
VENTILATION	LOCAL EXHAUST	X
	MECHANICAL (General)	
SPECIAL		OTHER
PROTECTIVE GLOVES Impervious to solvents		EYE PROTECTION Chemical splash goggles or face shield
OTHER PROTECTIVE EQUIP. Apron impervious to solvents		

SECTION IX — SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Avoid heat and open flames
OTHER PRECAUTIONS	

TRW-01086

0908-2454

# CONFIDENTIAL DATA FOR HAZARDOUS MATERIALS

4-014-2 HARDENER

Name of Product: \_\_\_\_\_

pH: ca. 10

Does Product Contain Any of the Following Listed Below? Tabulate Material & % Amount.

## I. INORGANIC MATERIALS (but including organic derivatives).

A. Cations			B. Anions		Material On List	% Amount
Aluminum	Copper	Phosphorus	Azides		Amines	100
Antimony	Lead	Selenium	Cyanides			
Arsenic	Lithium	Silver	Fluorides			
Beryllium	Manganese	Thallium	Nitrites, Nitrates			
Cadmium	Mercury	Tin	Phosphates			
Chromium	Nickel	Zinc	Silica or Silicates			
			Sulfides			

## II. ORGANIC MATERIALS

### A. Organic Compounds:

Abietic Acid	Dimethyl Dioxane
Acridine	Dioxane
Acrolein	Ethyl Acrylate
Amyl Acetate	Formaldehyde
Beta Propiolactone	Hydroquinone
Benzene	Isoprene
Benzaldehyde	Lactonitrile
Benzyl Bromide	Mesitylene
Butyl Alcohol	Mesityl Oxide
Butyric Acid	Methyl Alcohol
Carbon Disulfide	Napthenic Acid
Carbon Tetrachloride	Naphthol
Crotonaldehyde	Naphtholic Acid
Cumene	Oleic Acid
Dichloropropane	Styrene
Diethylbenzene	Vinyl Toluene

Peracetic Acid
Phenanthrene
Quinoline
Quinone
Turpentine
Polychlorinated
Biphenyls (PCB)
Hexachlorobenzene
Hexachlorobutadiene
Phenols

### IV. Carcinogens

Vinyl Chloride
2 - Acetylaminofluorene
4 - Aminodiphenyl
Benzidine (and its salts)
3, 3' - Dichlorobenzidine (and its salts)
4 - Dimethylaminobenzene
Alpha - Naphthylamine
B - Nitrobyphenyl
4 - Nitrobiphenyl
N - Nitrosodiumthylamine
B - Propiolactone
Bis - Chloromethylether
Methylchloromethylether
4, 4' - Methylene (Bis)-2- Chloroaniline
Ethyleneimine

### B. Classes of organic compounds:

Amines	Glycols
Anilines	Ketones
Butyraldehydes	Nitrobenzenes
Chlorinated Benzene Compounds	Phenolic compounds
Chlorinated Hydrocar- bons	Phthalates
Ether containing compounds	Picramates
	Pyridines
	Silanes
	Xylenes

## III. PESTICIDES, HERBICIDES AND FUNGICIDES

### Herbicides

Tordon  
2-4-5 T (and its  
formulations)

### Pesticides

Aldrin  
DDT  
Dieldrin  
Endrin  
Heptachlor  
Toxaphene

Certifying officer	Title	Company	Date
H. James White	Technical Director	Walter M. McKim & Son, Inc.	3/14/85

Telephone No.: 617-647-5560

SEP 19 1985

**U.S. DEPARTMENT OF LABOR**  
Occupational Safety and Health Administration

D. BORSUK

# MATERIAL SAFETY DATA SHEET

SECTION I	
MANUFACTURER'S NAME WALTER M. MCKIM & SON, INC.	EMERGENCY TELEPHONE NO. 617-647-5560
ADDRESS 225 Riverview Avenue, Waltham, Massachusetts 02254	
CHEMICAL NAME AND SYNONYMS NA	TRADE NAME AND SYNONYMS 4-014-2 HARDENER
CHEMICAL FAMILY Aliphatic Amido Amine	FORMULA na

SECTION II - INGREDIENTS					
PAINT, PRESERVATIVES & SOLVENTS	%	TLV (Units)	ALLOYS & METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Amido Polyamine CAS No. Confidential				90	NA
Activated Aliphatic Amine CAS No. Confidential				10	NA

SECTION III - PHYSICAL DATA			
BOILING POINT (°F)	> 400° F	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	1
VAPOR PRESSURE (mm Hg.)	< 1	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR=1)	NA	EVAPORATION RATE (Bu Ac = 1)	< 1
SOLUBILITY IN WATER	Slight		
APPEARANCE AND ODOR Amber viscous liquid. Amine odor.			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA			
FLASH POINT (Method Used)	200° F Setaflash	FLAMMABLE LIMITS	LOL NA
VOL NA			
EXTINGUISHING MEDIA Foam, CO <sub>2</sub> , Dry Chemical, or Water Spray			
SPECIAL FIRE FIGHTING PROCEDURES Treat as Class B fire.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Avoid excessive heat, sparks or open flames			

SECTION V — HEALTH HAZARD DATA		
THRESHOLD LIMIT VALUE	NA	
EFFECTS OF OVEREXPOSURE	ACUTE	CHRONIC
	Irritation of nose, throat and eyes if exposed to heated vapor	Can cause eye and skin irritation on prolonged or repeated contact
EMERGENCY & FIRST AID PROCEDURES		
	Ingestion:	Give milk to drink. Do not induce vomiting.
	Inhalation:	Remove to fresh air
	Contact:	Wash eyes with water, Wash skin with soap and water

SECTION VI — REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents, acids			
HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide, aldehydes and acids, amines			
HAZARDOUS POLYMERIZATION	MAY OCCUR	X	CONDITIONS TO AVOID See incompatibility Uncontrolled curing with epoxies in masses greater than 2 inches thick
	WILL NOT OCCUR		

SECTION VII — SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Clean all spills thoroughly. For small amounts, MEK or acetone can be used. For large spills, scrape up, then wash.	
WASTE DISPOSAL METHOD Consult local codes	

SECTION VIII — SPECIAL PROTECTION INFORMATION		
RESPIRATORY PROTECTION (Specify type) - NIOSH approved canister mask air hose or self contained breathing apparatus when used in confined areas.		
VENTILATION	LOCAL EXHAUST	X
	MECHANICAL (General)	
SPECIAL		OTHER
PROTECTIVE GLOVES Impervious to solvents		EYE PROTECTION Chemical splash goggles or face shield
OTHER PROTECTIVE EQUIP. Apron impervious to solvents		

SECTION IX — SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Avoid heat and open flames
OTHER PRECAUTIONS	

# CONFIDENTIAL DATA FOR HARZARDOUS MATERIALS

Name of Product: 4-014-2 RESIN

pH: No Do

Does Product Contain Any of the Following Listed Below? Tabulate Material & % Amount.

## I. INORGANIC MATERIALS (but including organic derivatives).

A. Cations			B. Anions	Material On List	% Amount
Aluminum	Copper	Phosphorus	Azides	Silica & Silicates	18
Antimony	Lead	Selenium	Cyanides		
Arsenic	Lithium	Silver	Flourides		
Beryllium	Manganese	Thallium	Nitrites, Nitrates		
Cadmium	Mercury	Tin	Phosphates		
Chromium	Nickel	Zinc	Silica or Silicates		
			Sulfides		

## II. ORGANIC MATERIALS

### A. Organic Compounds:

Abietic Acid	Dimethyl Dioxane
Acridine	Dioxane
Acrolein	Ethyl Acrylate
Amyl Acetate	Formaldehyde
Beta Propiolactone	Hydroquinone
Benzene	Isoprene
Benzaldehyde	Lactonitrile
Benzyl Bromide	Mesitylene
Butyl Alcohol	Mesityl Oxide
Butyric Acid	Methyl Alcohol
Carbon Disulfide	Napthenic Acid
Carbon Tetrachloride	Naphthol
Crotonaldehyde	Naphtholic Acid
Cumene	Oleic Acid
Dichloropropane	Styrene
Diethylbenzene	Vinyl Toluene

### B. Classes of organic compounds:

Amines	Glycols
Anilines	Ketones
Butyraldehydes	Nitrobenzenes
Chlorinated Benzene	Phenolic compounds
Compounds	Phthalates
Chlorinated Hydrocar-	Picramates
bons	Pyridines
Ether containing	Silanes
compounds	Xylenes

Peracetic Acid
Phenanthrene
Quinoline
Quinone
Turpentine
Polychlorinated
Biphenyls (PCB)
Hexachlorobenzene
Hexchlorobutadiene
Phenols

### IV. Carcinogens

Vinyl Chloride
2 - Acetylaminofluorene
4 - Aminodiphenyl
Benzidine (and its salts)
3, 3' - Dichlorobenzidine
(and its salts)
4 - Dimethylaminobenzene
Alpha - Naphthylamine
B - Nitrobyphenyl
4 - Nitrobiphenyl
N - Nitrosodiumthylamine
B - Propiolactone
Bis - Chloromethylether
Methylchloromethylether
4, 4' - Methylene (Bis)-2-
Chloroaniline
Ethyleneimine

## III. PESTICIDES, HERBICIDES AND FUNGICIDES

### Herbicides

Tordon  
2-4-5 T (and its  
formulations)

### Pesticides

Aldrin  
DDT  
Dieldrin  
Endrin  
Heptachlor  
Toxaphene

Certifying officer	Title	Company	Date
H. James White	Technical Director	Walter M. McKim & Son, Inc.	3/14/85

Telephone No.: \_\_\_\_\_

Epoxy used in Hazardous waste  
Trenches

\*\*\* MATERIAL SAFETY DATA SHEET \*\*\*

SECTION I

Manufacturer: Arnel Co. Inc.  
P.O. Box 2003  
Danvers, Ma. 01923

Telephone: (617) 744-5952

Product: Trade Name- 19-0223 Epoxy Base Part A  
Chemical Name- Diglycidyl Ether Bisphenol A Epoxy  
D.C.T. Class.- Not Regulated

SECTION II: INGREDIENTS

Material	Cas. #	Weight %	TLV
Reaction Products of Epichlorohydrin	25068-36-6	73.0	N/A
Alkydglycidyl Ether	68081-84-5	22.0	N/A

SECTION III: PHYSICAL DATA

Appearance: Straw colored viscous liquid  
Odor: Chlorinated Odor  
Viscosity: 2000 to 3000 cps. max. Brookfield  
Boiling Point: 500 degrees F  
Vapor Density: >1 Heavier than Air  
Solubility in Water: 0  
Volatile % (by volume): 0.00  
Specific Gravity: 1.12 to 1.14 ( Water=1 )  
Evaporation Rate: 0

SECTION IV: FIRE & EXPLOSION HAZARD

Flash Point: 200 degrees F Method- Setaflash  
Extinguishing Media: Foam, CO2, Dry Chemical

Special Fire Fighting: Wear MSHA/NIOSH approved, pressure demand  
self contained breathing apparatus with  
full protective equipment. Cool fire ex-  
posed containers with water spray.

continued on page

SECTION V: HEALTH HAZARD DATA

Inhalation: Not considered a problem unless heated to very high temperature.

Skin Contact: Prolonged or repeated contact with product can cause skin irritation. Some people experience allergic reaction to epoxy (ie. rash, itching, etc.)

Eye Contact: Direct contact can cause eye irritation and temporary eye damage.

SECTION VI: FIRST AID

Inhalation: Remove subject to fresh air.

Eye & Skin Contact: Immediately and thoroughly wash eyes with plenty of water for at least 15 minutes and see a physician if irritation occurs; wash skin thoroughly with soap and water, remove and wash contaminated clothing before reuse.

Ingestion: Call physician immediately. Do not induce vomiting.

SECTION VII: REACTIVITY DATA

Stability: This material is stable. May be incompatibility with strong acids, amines, mercaptans & bases.

Decomposition Products: Thermal decomposition may produce carbon monoxide or CO<sub>2</sub>.

SECTION VIII: SPILL & LEAK PROCEDURES

Keep all unprotected and unnecessary people away. Dike and contain spill with inert material (sand, earth, etc.) and transfer the liquid and solid separately to containers for recovery or disposal. Keep spill out of sewers and open bodies of water. Dispose of in manner approved by Federal, State, and Local authorities. Caution- floors may become slippery. FOR DISCARD THIS IS HAZARDOUS WASTE.

SECTION IX: SPECIAL PROTECTION

Ventilation: Local exhaust at point of use. Open windows, doors etc.

Respiratory Protection: None required if adequate ventilation is maintained.

Skin: Gloves, apron, long sleeves & pants to avoid direct contact with skin.

Eyes: Safety Goggles recommended.

continued on page 3-



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SECTION X: STORAGE & LABELING  
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Storage Temp.: 60 degrees C max., 140 degrees F max.  
Do Not Heat or Refrigerate.  
General: Practice reasonable care and cleanliness.  
If transferred to new container reproduce all  
markings & cautions on new container.

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SECTION XI: HAZARD RATING  
-----

Health	- 1	4 = Extreme
Flammability	- 1	3 = High
Reactivity	- 0	2 = Moderate
		1 = Slight
		0 = Insignificant

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Date of Issue : 1/31/87

TRW-01093

0908-2461

\*\* M A T E R I A L   S A F E T Y   D A T A   S H E E T   \*\*

-----  
SECTION I  
-----

Manufacturer:            Arnel Co. Inc.  
                         P.O. Box 2003  
                         Danvers, Ma. 01923

Telephone:              (617) 744-5952

Product:                Trade Name-        19-9844 CR Epoxy Cure Part B  
                         Chemical Name-    Aromatic Amine Type  
                         D.C.T. Classification- CORROSIVE MATERIAL cn 1700

-----  
SECTION II: INGREDIENTS  
-----

Material	Cas. #	Weight %	TLV
Modified Aromatic DiAmine Mixture	N/A	100.0	N/A

-----  
SECTION III: PHYSICAL DATA  
-----

Appearance:	Dark Brown Solution
Odor:	Faint Amine Odor
Viscosity:	1000 cps. Brookfield
Boiling Point:	388 degrees F
Vapor Density:	>1 Heavier than Air
Solubility in Water:	None
Volatile % (by volume):	0.0 %
Specific Gravity:	1.11 ( Water=1 )
Evaporation Rate:	N/A

-----  
SECTION IV: FIRE & EXPLOSION HAZARD  
-----

Flash Point:	170 degrees F    Method- TCC
Extinguishing Media:	Foam, CO2, Dry Chemical
Special Fire Fighting:	Wear MSHA/NIOSH approved, pressure demand self contained breathing apparatus with full protective equipment.

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continued on page 2-  
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SECTION V: HEALTH HAZARD DATA  
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Inhalation: Vapor may cause headaches, nausea, dizziness and irritation to nose, throat and lungs.

Skin Contact: This is CORROSIVE MATERIAL expected to cause severe skin damage with burns and blistering.

Eye Contact: Direct contact can cause eye irritation with possibility of permanent eye damage.

-----  
SECTION VI: FIRST AID  
-----

Inhalation: Remove subject to fresh air. Seek medical attention if symptoms persist.

Eye & Skin Contact: Immediately and thoroughly wash eyes with plenty of water for at least 15 minutes and see a physician immediately. Wash skin thoroughly with soap and water, remove contaminated clothing and seek medical attention.

Ingestion: Call physician immediately. Do not induce vomiting. Give large amounts of water if conscious.

-----  
SECTION VII: REACTIVITY DATA  
-----

Stability: This material is stable under normal conditions. May react violently with strong oxidizers.

Decomposition Products: Ammonia, carbon monoxide or CO2 may form if burned in limited air.

-----  
SECTION VIII: SPILL & LEAK PROCEDURES  
-----

Keep all unprotected and unnecessary people away. Dike and contain spill with inert material (sand, earth, etc.) and transfer the liquid and solid separately to containers for recovery or disposal. Keep spill out of sewers and open bodies of water. Dispose of in manner approved by Federal, State, and Local authorities. Caution- floors may become slippery. FOR DISCARD THIS IS HAZARDOUS WASTE.

-----  
SECTION IX: SPECIAL PROTECTION  
-----

Ventilation: Local exhaust at point of use. Open windows, doors etc.

Respiratory Protection: Respirator with organic vapor cartridge may be necessary if adequate ventilation is not maintained.

Skin: Gloves, apron, long sleeves & pants to avoid direct contact with skin.

Eyes: Safety Goggles or full face mask.

-----  
SECTION X: STORAGE & LABELING  
-----

Storage Temp.: 20 degrees C max., 140 degrees F max.  
Do Not Heat or Refrigerate.  
General: Practice extreme care and cleanliness.  
If transferred to new container reproduce all  
markings & cautions on new container.  
Keep container closed tightly when not in use.

-----  
SECTION XI: HAZARD RATING  
-----

Health	- 3	4 = Extreme
Flammability	- 1	3 = High
Reactivity	- 0	2 = Moderate
		1 = Slight
		0 = Insignificant

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Date of Issue : 7/18/88

P.O. BOX 2003 DANVERS, MA 01923  
(617) 744-5952

### E P O X Y   P A T C H

- DIRECTIONS;** All surfaces should be properly prepared and materials and tools readied, before Epoxy Patch is mixed.
- SURFACE PREPARATIONS;** Remove all dirt, paint, unsound concrete, etc. In event surface is greasy or oily, clean with detergent and flush surface thoroughly with clean water. Sand-blasting or grinding is an effective method of preparation. Acid conditions should be neutralized.
- MIXING;** Empty all aggregate into a suitable mixing container. Mix all of Part A Resin Base with all of Part B Hardner. Pour mixture into aggregate and blend with a hoe making sure aggregate is completely wet. Use all materials provided in order to assure that you have correct mix. Do not use foreign material. Mix the unit together just prior to use for the resulting compound has a useful pot life of only 30-45 minutes depending on temperature.
- COVERAGE;** 96# unit will cover 32 sq. ft. @ 1/4 inch thickness.  
49# unit will cover 16 sq. ft. @ 1/4 inch thickness.  
25# unit will cover 8 sq. ft. @ 1/4 inch thickness.
- APPLICATION;** Apply Epoxy Patch by trowel just as conventional cement. For best results keep the thickness between 1/8 and 1/4 inch. Feathering will stand up better if coated with Dan-Pox TopCoat.
- CURING;** Minimum surface temperature required is 60 degrees F. Epoxy Patch will cure up sufficiently within 12 hours for light traffic. Maximum properties will occur after seven (7) days.
- PRECAUTIONS;** Any epoxy product by its nature is a strong skin sensitizer. Therefore, the use of rubber gloves or protective hand cream and adequate ventilation are required during application. All utensils should be cleaned with Dan Pox Cleaner before material hardens. Allow the product to cure properly; time is not the only governing factor. Atmospheric conditions, floor surface temperature, etc., can cause the system to cure at a slower rate.

The information presented in this Technical Data bulletin is intended to convey the best available data on this compound to facilitate its safe handling and to stimulate interest in its use. The uses referred to are listed for purposes of illustration only and it is recommended that sufficient investigation be carried on to establish the suitability of their application in any particular use. No guaranty or warranty is implied or intended as to the suitability of any chemical compound for any particular use. Nothing herein is to be construed as advising or authorizing practice of any invention covered by existing patents without license from the owners thereof.

P.O. BOX 2003 DANVERS, MA 01923  
(617) 744-5952

### TUFFY STONE CARPETTING

#### CHEMICAL RESISTANT (CR)

---

**PRODUCT DESCRIPTION:** Tuffy CR is a two component 100% Solid Epoxy flooring system for use in environments where the ultimate chemical resistance is required.

**SPECIFICATION:** All surface preparation and application shall conform to Arnel Co. Inc. specification titled Tuffy Stone Carpetting Type I with the single exception of substituting 19-9844 CR Curing agent in place of the Standard Tuffy Cure 19-0224.

#### CHEMICAL RESISTANCE:

The following list of substances were found to have no effect on the Tuffy CR flooring system under normal conditions. This list is not all inclusive. The concentrations found on this list represent those which are commonly found and does not necessarily mean that the system will fail if subjected to a higher concentration.

Sulfuric Acid, 10%  
Hydrochloric Acid, 10%  
Phosphoric Acid, 10%  
Citric Acid, 10%  
Linseed Oil fatty Acid  
Sodium Hydroxide, 20%  
Sodium Hydroxide, 50%  
Ammonium Hydroxide, 29%  
Sea Water  
Tap Water  
Distilled Water  
Sodium Sulfite, 1%  
Butyl Acetate  
Ethyl Acetate  
Isopropyl Acetate  
Isopropyl Alcohol  
Ethyl Alcohol

Zinc Hydrosulfite, 1%  
Calcium Hypochlorite, 5%  
Sodium Hypochlorite, 5%  
Butyl Alcohol  
Ethylene Glycol  
Lard  
Cottonseed Oil  
Mineral Oil  
Sour Crude Oil  
Hydrogen Peroxide, 20%  
Formaldehyde, 37%  
Methyl Ethyl Ketone  
Acetone  
Methyl IsoButyl Ketone  
Toluene  
Xylene  
Lacquer Thinner

L-122

The information presented in this Technical Data bulletin is intended to convey the best available data on this compound to facilitate its safe handling and to stimulate interest in its use. The uses referred to are listed for purposes of illustration only, and it is recommended that sufficient investigation be carried on to establish the suitability of their application in any particular use. No guaranty or warranty is implied or intended as to the suitability of any chemical compound for any particular use. Nothing herein is to be construed as advising or authorizing practice of any invention covered by existing patents without license from the owners thereof.

TRW-01098

0908-2466

CAS # 10034-99-8

M A T E R I A L   S A F E T Y   D A T A   S H E E T   P A G E :   1  
DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 05 FEB 82

PRODUCT CODE: 28234

PRODUCT NAME: EPSOM SALT, TECHNICAL, BAGS

MSD: 0157

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS) : % :

MAGNESIUM SULFATE (AS MAGNESIUM SULFATE : :  
HEPTAHYDRATE) : 100 :

SECTION 1

PHYSICAL DATA

BOILING POINT: NOT APPLIC. : SOL. IN WATER: APPROX. 100 G/100 ML. @ 20C  
VAP PRESS: N/A : SP. GRAVITY: 1.05 (BULK DENSITY)  
VAP DENSITY (AIR=1): N/A : % VOLATILE BY VOL: NOT APPL.  
APPEARANCE AND ORDER: CLEAR, ODORLESS CRYSTAL.

SECTION 2

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: N/A : FLAMMABLE LIMITS (STP IN AIR)  
METHOD USED: ---- : LFL: N/A UFL: N/A  
EXTINGUISHING MEDIA: NON-COMBUSTIBLE.  
SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: NONE.

SECTION 3

REACTIVITY DATA

STABILITY: ----  
INCOMBATIBILITY: ----  
HAZARDOUS DECOMPOSITION PRODUCTS: MAGNESIUM OXIDE, SULFUR DIOXIDE, AND  
SULFUR TRIOXIDE AT VERY HIGH TEMPERATURES.  
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION 4

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS: NO  
SPECIAL PRECAUTIONS NECESSARY - SWEEP UP AND RETURN TO CONTAINER,  
OR DISCARD.  
DISPOSAL METHOD: WASH AWAY WITH LARGE EXCESS OF WATER OR BURY AWAY  
FROM WATER SOURCES.

SECTION 5

HEALTH HAZARD DATA

INGESTION: LOW ACUTE ORAL TOXICITY: LD50 RATS GREATER THAN 4000 MG/KG OF

(CONTINUED ON PAGE 2 )

(R) INDICATES A REGISTERED OR TRADEMARK NAME OF THE DOW CHEMICAL COMPANY

M A T E R I A L S A F E T Y D A T A S H E E T    P A G E :    2  
DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 05 FEB 82  
PRODUCT (CONT'D): EPSOM SALT, TECHNICAL, BAGS

PRODUCT CODE: 28234  
MSD: 0157

SECTION 5                      HEALTH HAZARD DATA (CONTINUED)

INGESTION: (CONTINUED)

BODY WEIGHT WHICH IS HIGHEST DOSE GIVEN.  
EYE CONTACT: ONLY MINOR IRRITATION LIKELY; NO CORNEAL INJURY EXPECTED.  
SKIN CONTACT: ONLY MINOR IRRITATION LIKELY.  
SKIN ABSORPTION: NOT ABSORBED THROUGH SKIN.  
INHALATION: DUST MAY BE VERY SLIGHTLY IRRITATING - NOT A  
SERIOUS PROBLEM.  
EFFECTS OF OVEREXPOSURE: CATHARSIS, VOMITING.

SECTION 6                      FIRST AID--NOTE TO PHYSICIAN

FIRST AID PROCEDURES:

EYES: IRRIGATION OF THE EYE IMMEDIATELY WITH WATER FOR FIVE MINUTES  
IS GOOD SAFETY PRACTICE.  
SKIN: WASH OFF IN FLOWING WATER.  
INHALATION: FAIREMOVE TO FRESH AIR IF EFFECTS OCCUR. CONSULT MEDICAL  
PERSONNEL.  
INGESTION: LOW IN TOXICITY. INDUCE VOMITING IF LARGE AMOUNTS ARE  
INGESTED.

NOTE TO PHYSICIAN:

EYES: MAY CAUSE MILD IRRITATION. STAIN FOR EVIDENCE OF CORNEAL  
INJURY.  
SKIN: NO EFFECT EXPECTED.  
RESPIRATORY: MAY CAUSE MILD IRRITATION.  
ORAL: MAY CAUSE ABDOMINAL CRAMPS AND/OR DIARRHEA. MAY CAUSE  
NAUSEA OR VOMITING.

SECTION 7                      SPECIAL HANDLING INFORMATION

VENTILATION: GOOD ROOM VENTILATION USUALLY ADEQUATE FOR MOST OPERATIONS.  
RECOMMEND CONTROL OF DUST TO COMFORT LEVEL IN WORK AREA.  
RESPIRATORY PROTECTION: NONE NORMALLY NEEDED. IF REQUIRED, USE AN APPROVED  
DUST RESPIRATOR.  
PROTECTIVE CLOTHING: NO SPECIAL CLOTHING NEEDED; WEAR CLEAN CLOTHING.  
EYE PROTECTION: NOT NORMALLY NECESSARY. SAFETY GLASSES WITHOUT  
SIDE SHIELDS, DEPENDING UPON SEVERITY OF POSSIBLE EXPOSURE.

SECTION 8                      SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: STORE MAGNESIUM SULFATE  
HEPTAHYDRATE IN A SEALED CONTAINER IN DRY AREA TO AVOID CAKING.

ADDITIONAL INFORMATION: 05 FEB 82 REVISED FROM 23 OCT 78 --

(CONTINUED ON PAGE 3 )

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M A T E R I A L S A F E T Y D A T A S H E E T PAGE: 3  
DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 05 FEB 82 PRODUCT CODE: 28234  
PRODUCT (CONT'D): EPSOM SALT, TECHNICAL, BAGS MSD: 0157

SECTION 8 SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION (CONTINUED)

ADDITIONAL INFORMATION: (CONTINUED)  
SECTIONS 1-4 & 8.

LAST PAGE

(R) INDICATES A REGISTERED OR TRADEMARK NAME OF THE DOW CHEMICAL COMPANY

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY,  
EXPRESS OR IMPLIED, IS MADE.

J.T. BAKER INC. 222 RED SCHOOL LANE, PHILLIPSBURG, NJ 08865  
M A T E R I A L   S A F E T Y   D A T A   S H E E T  
24-HOUR EMERGENCY TELEPHONE -- (201) 959-2151  
CHEMTREC # (800) 424-2300 -- NATIONAL RESPONSE CENTER # (800) 424-8802

150 -05  
EFFECTIVE: 05/01/89

ETHYL ACETATE

PAGE: 2  
ISSUED: 05/16/89

=====

PRECAUTIONARY LABELING (CONTINUED)

=====

KEEP AWAY FROM SOURCES OF IGNITION - NO SMOKING. DO NOT BREATHE VAPOUR. DO NOT  
EMPTY INTO DRAINS. TAKE PRECAUTIONARY MEASURES AGAINST STATIC DISCHARGES.

SAF-T-DATA\* STORAGE COLOR CODE: RED (FLAMMABLE)

=====

SECTION II - COMPONENTS

=====

COMPONENT	CAS NO.	WEIGHT %	OSHA/PEL	ACGIH/TLV
ETHYL ACETATE	141-78-6	99-100	400 PPM	400 PPM

=====

SECTION III - PHYSICAL DATA

=====

BOILING POINT: 77 C (170 F)  
(AT 760 MM HG)

VAPOR PRESSURE (MMHG): 76  
(20 C)

MELTING POINT: -34 C (-119 F)  
(AT 760 MM HG)

VAPOR DENSITY (AIR=1): 3.0

SPECIFIC GRAVITY: 0.90  
(H2O=1)

EVAPORATION RATE: 6  
(BUTYL ACETATE = 1)

SOLUBILITY(H2O): MODERATE (1-10%)

% VOLATILES BY VOLUME: 100  
(21 C)

PH: N/A

ODOR THRESHOLD (P.P.M.): N/A

PHYSICAL STATE: LIQUID

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

APPEARANCE & ODOR: CLEAR, COLORLESS LIQUID. FRUITY ODOR.

=====

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

=====

FLASH POINT (CLOSED CUP): -4 C (24 F)

NEPA 704M RATING: 1-3-0

AUTOIGNITION TEMPERATURE: 425 C (800 F)

CONTINUED ON PAGE: 3

150 -05  
EFFECTIVE: 05/01/89

ETHYL ACETATE

PAGE: 3  
ISSUED: 05/16/89

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SECTION IV - FIRE AND EXPLOSION HAZARD DATA (CONTINUED)

=====

FLAMMABLE LIMITS: UPPER - 11.0 % LOWER - 2.2 %

FIRE EXTINGUISHING MEDIA

USE ALCOHOL FOAM, DRY CHEMICAL OR CARBON DIOXIDE. (WATER MAY BE INEFFECTIVE.)

SPECIAL FIRE-FIGHTING PROCEDURES

FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE. MOVE CONTAINERS FROM FIRE AREA IF IT CAN BE DONE WITHOUT RISK. USE WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL.

UNUSUAL FIRE & EXPLOSION HAZARDS

VAPORS MAY FLOW ALONG SURFACES TO DISTANT IGNITION SOURCES AND FLASH BACK. CLOSED CONTAINERS EXPOSED TO HEAT MAY EXPLODE. CONTACT WITH STRONG OXIDIZERS MAY CAUSE FIRE.

TOXIC GASES PRODUCED

CARBON MONOXIDE, CARBON DIOXIDE

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT

NONE IDENTIFIED.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE

NONE IDENTIFIED.

=====

SECTION V - HEALTH HAZARD DATA

=====

THRESHOLD LIMIT VALUE (TLV/THA): 1400 MG/M3 (400 PPM)

SHORT-TERM EXPOSURE LIMIT (STEL): NOT ESTABLISHED

PERMISSIBLE EXPOSURE LIMIT (PEL): 1400 MG/M3 (400 PPM)

TOXICITY OF COMPONENTS

ORAL RAT LD50 FOR ETHYL ACETATE

11.3 G/KG

INHALATION-8HR RAT LC50 FOR ETHYL ACETATE

1600 PPM

INTRAPERITONEAL MOUSE LD50 FOR ETHYL ACETATE

709 MG/KG

CONTINUED ON PAGE: 4

150 -05  
EFFECTIVE: 05/01/89

ETHYL ACETATE

PAGE: 4  
ISSUED: 05/16/89

=====

SECTION V - HEALTH HAZARD DATA (CONTINUED)

=====

CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO

CARCINOGENICITY  
NONE IDENTIFIED.

REPRODUCTIVE EFFECTS  
NONE IDENTIFIED.

EFFECTS OF OVEREXPOSURE

INHALATION: IRRITATION OF NOSE AND THROAT, HEADACHE, NAUSEA,  
VOMITING, DIZZINESS, MARCOSIS, RESPIRATORY FAILURE, LOW  
BLOOD PRESSURE, CENTRAL NERVOUS SYSTEM DEPRESSION

SKIN CONTACT: DERMATITIS

EYE CONTACT: IRRITATION

SKIN ABSORPTION: NONE IDENTIFIED

INGESTION: HEADACHE, NAUSEA, VOMITING, DIZZINESS, GASTROINTESTINAL  
IRRITATION

CHRONIC EFFECTS: DAMAGE TO LIVER, KIDNEYS, HEART, LUNGS, CENTRAL NERVOUS  
SYSTEM DEPRESSION

TARGET ORGANS

EYES, SKIN, RESPIRATORY SYSTEM, LIVER, KIDNEYS, LUNGS, HEART, CENTRAL  
NERVOUS SYSTEM

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE  
RESPIRATORY SYSTEM DISEASE, SKIN DISORDERS, ANEMIA

PRIMARY ROUTES OF ENTRY

INHALATION, INGESTION, EYE CONTACT, SKIN CONTACT

EMERGENCY AND FIRST AID PROCEDURES

INGESTION: CALL A PHYSICIAN. IF SWALLOWED, IF CONSCIOUS, IMMEDIATELY  
INDUCE VOMITING.

INHALATION: IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE  
ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE  
OXYGEN.

CONTINUED ON PAGE: 5

150 -05  
EFFECTIVE: 05/01/89

ETHYL ACETATE

PAGE: 5  
ISSUED: 05/16/89

=====

SECTION V - HEALTH HAZARD DATA (CONTINUED)

=====

SKIN CONTACT: IN CASE OF CONTACT, FLUSH SKIN WITH WATER.

EYE CONTACT: IN CASE OF EYE CONTACT, IMMEDIATELY FLUSH WITH PLenty OF  
WATER FOR AT LEAST 15 MINUTES.

SARA/TITLE III HAZARD CATEGORIES AND LISTS

ACUTE: YES CHRONIC: YES FLAMMABILITY: YES PRESSURE: NO REACTIVITY: NO

EXTREMELY HAZARDOUS SUBSTANCE: NO

CERCLA HAZARDOUS SUBSTANCE: YES CONTAINS ACETIC ACID, ETHYL ESTER (RQ =  
5000 LBS)

TOXIC CHEMICALS: NO

TSCA INVENTORY: YES

=====

SECTION VI - REACTIVITY DATA

=====

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: HEAT, FLAME, OTHER SOURCES OF IGNITION

INCOMPATIBLES: STRONG OXIDIZING AGENTS, STRONG ACIDS, STRONG BASES,  
ALKALIES, STRONG REDUCING AGENTS

DECOMPOSITION PRODUCTS: CARBON MONOXIDE, CARBON DIOXIDE

=====

SECTION VII - SPILL & DISPOSAL PROCEDURES

=====

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE

WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. SHUT  
OFF IGNITION SOURCES; NO FLARES, SMOKING OR FLAMES IN AREA. STOP LEAK IF  
YOU CAN DO SO WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. TAKE UP  
WITH SAND OR OTHER NON-COMBUSTIBLE ADSORBENT MATERIAL AND PLACE INTO  
CONTAINER FOR LATER DISPOSAL. FLUSH AREA WITH WATER.

J. T. BAKER SOLUSORB(R) SOLVENT ADSORBENT IS RECOMMENDED FOR SPILLS OF THIS  
PRODUCT.

CONTINUED ON PAGE: 6

50 -05  
EFFECTIVE: 05/01/89

ETHYL ACETATE

PAGE: 6  
ISSUED: 05/16/89

=====

SECTION VII - SPILL & DISPOSAL PROCEDURES (CONTINUED)

=====

DISPOSAL PROCEDURE

DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL  
ENVIRONMENTAL REGULATIONS.

EPA HAZARDOUS WASTE NUMBER: U112 (TOXIC WASTE)

=====

SECTION VIII - INDUSTRIAL PROTECTIVE EQUIPMENT

=====

VENTILATION: USE GENERAL OR LOCAL EXHAUST VENTILATION TO MEET TLV  
REQUIREMENTS.

RESPIRATORY PROTECTION: RESPIRATORY PROTECTION REQUIRED IF AIRBORNE  
CONCENTRATION EXCEEDS TLV. AT CONCENTRATIONS UP TO  
1000 PPM, A CHEMICAL CARTRIDGE RESPIRATOR WITH ORGANIC  
VAPOR CARTRIDGE IS RECOMMENDED. ABOVE THIS LEVEL, A  
SELF-CONTAINED BREATHING APPARATUS IS RECOMMENDED.

EYE/SKIN PROTECTION: SAFETY GOGGLES AND FACE SHIELD, UNIFORM, PROTECTIVE  
SUIT, RUBBER GLOVES ARE RECOMMENDED.

=====

SECTION IX - STORAGE AND HANDLING PRECAUTIONS

=====

SAF-T-DATA# STORAGE COLOR CODE: RED (FLAMMABLE)

STORAGE REQUIREMENTS

KEEP CONTAINER TIGHTLY CLOSED. STORE IN A COOL, DRY, WELL-VENTILATED,  
FLAMMABLE LIQUID STORAGE AREA.

SPECIAL PRECAUTIONS

BOND AND GROUND CONTAINERS WHEN TRANSFERRING LIQUID.

=====

SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

=====

CONTINUED ON PAGE: 7

50 -05  
EFFECTIVE: 05/01/89

ETHYL ACETATE

PAGE: 7  
ISSUED: 05/16/99

=====

SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION (CONTINUED)

=====

DOMESTIC (D.O.T.)

PROPER SHIPPING NAME: ETHYL ACETATE  
HAZARD CLASS: FLAMMABLE LIQUID  
UN/NA: UN1173 REPORTABLE QUANTITY: 5000 LBS.  
LABELS: FLAMMABLE LIQUID  
REGULATORY REFERENCES: 49CFR 172.101; 173.119

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME: ETHYL ACETATE  
HAZARD CLASS: 3.2 I.M.O. PAGE: 3075  
UN: UN1173 MARINE POLLUTANTS: NO PACKAGING GROUP: II  
LABELS: FLAMMABLE LIQUID  
REGULATORY REFERENCES: 49CFR 172.102; PART 176; IMDG

AIR (I.C.A.O.)

PER SHIPPING NAME: ETHYL ACETATE  
HAZARD CLASS: 3.2  
UN: UN1173 PACKAGING GROUP: II  
LABELS: FLAMMABLE LIQUID  
REGULATORY REFERENCES: 49CFR 172.101; 173.6; PART 175; ICAO/IATA

U.S. CUSTOMS HARMONIZATION NUMBER: 29153100003

=====

N/A = NOT APPLICABLE OR NOT AVAILABLE  
N/E = NOT ESTABLISHED

---  
THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET MEETS THE  
REQUIREMENTS OF THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ACT AND  
REGULATIONS PROMULGATED THEREUNDER (29 CFR 1910.1200 ET. SEQ.) AND THE  
CANADIAN WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. THIS DOCUMENT  
IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONARY HANDLING OF  
THE MATERIAL BY A PERSON TRAINED IN, OR SUPERVISED BY A PERSON TRAINED  
IN, CHEMICAL HANDLING. THE USER IS RESPONSIBLE FOR DETERMINING THE  
PRECAUTIONS AND DANGERS OF THIS CHEMICAL FOR HIS OR HER PARTICULAR  
APPLICATION. DEPENDING ON USAGE, PROTECTIVE CLOTHING INCLUDING EYE AND  
FACE GUARDS AND RESPIRATORS MUST BE USED TO AVOID CONTACT WITH MATERIAL  
OR BREATHING CHEMICAL VAPORS/FUMES.  
EXPOSURE TO THIS PRODUCT MAY HAVE SERIOUS ADVERSE HEALTH EFFECTS. THIS  
CONTINUED ON PAGE: 6

J.T.BAKER INC. 222 RED SCHOOL LANE, PHILLIPSBURG, NJ 08865  
M A T E R I A L   S A F E T Y   D A T A   S H E E T  
24-HOUR EMERGENCY TELEPHONE -- (201) 859-2151  
CHEMTREC # (800) 424-9300 -- NATIONAL RESPONSE CENTER # (800) 424-8802

50 -05  
EFFECTIVE: 05/01/89

ETHYL ACETATE

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ISSUED: 05/16/89

=====

CHEMICAL MAY INTERACT WITH OTHER SUBSTANCES. SINCE THE POTENTIAL USES ARE SO VARIED, BAKER CANNOT WARN OF ALL OF THE POTENTIAL DANGERS OF USE OR INTERACTION WITH OTHER CHEMICALS OR MATERIALS. BAKER WARRANTS THAT THE CHEMICAL MEETS THE SPECIFICATIONS SET FORTH ON THE LABEL. BAKER DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

THE USER SHOULD RECOGNIZE THAT THIS PRODUCT CAN CAUSE SEVERE INJURY AND EVEN DEATH, ESPECIALLY IF IMPROPERLY HANDLED OR THE KNOWN DANGERS OF USE ARE NOT HEEDED. READ ALL PRECAUTIONARY INFORMATION. AS NEW DOCUMENTED GENERAL SAFETY INFORMATION BECOMES AVAILABLE, BAKER WILL PERIODICALLY REVISE THIS MATERIAL SAFETY DATA SHEET. IF YOU HAVE ANY QUESTIONS, PLEASE CALL CUSTOMER SERVICE (1-800-JTBAKER) FOR ASSISTANCE.

---  
COPYRIGHT 1989 J.T.BAKER INC.  
\* TRADEMARKS OF J.T.BAKER INC.

===  
APPROVED BY QUALITY ASSURANCE DEPARTMENT.

-- LAST PAGE --





# EUTECTIC CORPORATION

40-40 172nd Street, Flushing, New York 11358-9981

MSDS NO.:	E0070	REV:	
DATE:	09/18/86		
CUSTOMER CODE NO.:	543-622-2		

## MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard 29CFR 1910.1200

T R W

ATTN: SAFETY DEPT/MSDS FILES  
265 THIRD ST  
CAMBRIDGE

MA 02142

ARC WELDING ELECTRO

### SECTION 1 - IDENTIFICATION

PRODUCT NAME OR NUMBER	AS48
PRODUCT TYPE	EUTECTRODE XHD
EMERGENCY TELEPHONE NO.	686818-358-4000

### SECTION 2 - HAZARDOUS INGREDIENTS

INGREDIENT	CAS NO.	EXPOSURE LIMIT (mg/m <sup>3</sup> )	
		OSHA PEL	ACGIH TLV
IRON	7439-89-6	5	NOT LISTED
CHROMIUM	7440-47-3	1	0.5
NICKEL	7440-02-0	1	1
POTASSIUM SILICATE	1312-76-1	NOT LISTED	NOT LISTED
TITANIUM DIOXIDE	13463-67-7	15	10
SODIUM SILICATE	6834-92-0	NOT LISTED	NOT LISTED
CALCIUM CARBONATE	1317-65-3	NOT LISTED	10
ALUMINUM OXIDE	1344-28-1	NOT LISTED	10
STRONTIUM CARBONATE	1633-05-2	NOT LISTED	NOT LISTED
SILICON DIOXIDE	7631-86-9	5	3
COBALT ALUMINUM OXIDE	1333-88-6	NOT LISTED	NOT LISTED

This section covers the materials from which this product is manufactured. The fumes and gases produced during normal use of this product are covered by Section V. The term "hazardous" in "Hazardous Materials" should be interpreted as a term required and defined in OSHA 29 CFR 1910.1200 and does not necessarily imply the existence of any hazard.

#### ELECTRODES, BRAZING RODS, & FLUXES

##### SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

Not Applicable for arc welding electrodes and brazing rods.  
For fluxes and chemical aids see Section 2 above.

##### SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Nonflammable. Welding arc and sparks and brazing flames can ignite combustibles and flammables. Refer to ANSI Z49.1 for fire prevention during the use of welding and allied procedures.

##### SECTION 5 - REACTIVITY DATA

###### Hazardous Decomposition Products

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures, and electrodes used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleansing and degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section 2, plus those from the base metal and coating, etc., as noted above.

Reasonably expected constituents of the fume would include: fluorides, complex oxides of iron, manganese, silicon, chromium, nickel, molybdenum, copper, and other metals listed in Section 2.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. (See ANSI/AWS F1.1 available from the "American Welding Society," P.O. Box 351040, Miami, FL 33135. Also from AWS is F1.3 "Evaluating Contaminants in the Welding Environment - A Sampling Strategy Guide," which gives additional advice on sampling).

##### SECTION 6 - HEALTH HAZARD DATA

###### Threshold Limit Value.

The ACGIH recommended general limit for Welding Fume NOC (Not Otherwise Classified) is 5 mg/m<sup>3</sup>. ACGIH-1985 (or latest date) preface states, "TLV-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations."

###### Primary Route of Entry

Fumes and gases may be inhaled. Skin or eye contact may occur with fluxes and chemical aids.

#### THERMAL SPRAY POWDERS

##### SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

Not Applicable

##### SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Nonflammable under normal working conditions. Metal powder dust may present a fire or explosion hazard under favorable conditions of particle size, dispersion and strong ignition source. Refer to AWS C2.1 "Recommended Safe Practices For Thermal Spraying" for more detail.

##### SECTION 5 - REACTIVITY DATA

###### Hazardous Decomposition Products

Fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the material being deposited. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: the number of workers and the volume of the work area, the quality and amount of ventilation, the position of the worker's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere and on the work such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.

During thermal spraying, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2. Decomposition products of normal operation include those originating from volatilization, reaction, or oxidation of the materials shown in Section 2, plus those from the base metal and coating, etc., as noted above.

Reasonably expected constituents of the fume would include complex oxides of the metals listed in Section 2.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation.

One recommended way to determine the composition and quantity of fumes, gases and dusts to which workers are exposed is to take an air sample inside the worker's helmet if worn or in the worker's breathing zone. (See ANSI/AWS F1.1 available from the "American Welding Society," P.O. Box 351040, Miami, FL 33135. Also from AWS is F1.3 "Evaluating Contaminants in the Welding Environment - A Sampling Strategy Guide," which gives additional advice on sampling). At a minimum the listed ingredients should be analyzed.

##### SECTION 6 - HEALTH HAZARD DATA

###### Threshold Limit Value.

The ACGIH recommended general limit for Welding Fume NOC (Not Otherwise Classified) is 5 mg/m<sup>3</sup>. ACGIH-1985 (or latest date) preface states, "The TLV-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations."

###### Primary Route of Entry

This material may be inhaled, come in contact with the skin or eyes, or be swallowed.

0908-2477

TRW-01109

## SECTION I - PRODUCT IDENTIFICATION

Manufacturer: STEWART HALL CHEMICAL CORP.

Information Phone: 9146686300

222 WASHINGTON STREET

Emergency Phone: 800-424-7300

MOUNT VERNON NY 10553

CHEMTREC Phone: 800-424-7300

Product Class: ORGANIC

! Hazard Ratings: Health - 1

Trade Name : EVERFORM

! none --&gt; extreme Fire - 0

! 0 --&gt; 4 Reactivity - 0

U.A.S. Number: MIXTURE

! Personal Protection - A

Prepared By : HARVEY GRODJESK

Title : TECHNICAL DIRECTOR

D.O.I. Hazard Class : NOT HAZARDOUS

UN #:

Proper Shipping Name: COMPOUND, CLEANING

Technical Name:

## SECTION II - HAZARDOUS INGREDIENTS

Ingredients	CAS #	Weight %	Exposure Limits		VP mm HG
			ACGIH/TLV	OSHA/PEL	
TRIETHANOLAMINE	102-71-6	5.10			0
ALKANOLAMINE	MIXTURE	5.00			0

\*\*\* ALL Ingredients in this product are listed in the F.S.C.A. Inventory.

## SECTION III - PHYSICAL DATA

Boiling Range: 212

Vapor Density: Heavier than Air.

Evap. Rate: Faster than n-Butyl Acetate

Liquid Density: Heavier than Water.

Volatiles vol % 75 Wgt% 45.3

Wgt per gallon: 8.66 Pounds.

Spec. Gravity: 1.03962

Appearance: YELLOW, CLEAR. SLIGHT ODOR.

V.O.C.: 6

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flammability Class: NA

Flash Point: NONE F PMCC LEL:

UEL: 0.00%

-EXTINGUISHING MEDIA:

NONE

-SPECIAL FIREFIGHTING PROCEDURES:

NONE

-UNUSUAL FIRE &amp; EXPLOSION HAZARDS:

NONE

RECEIVED

JUL 23 1992

TRW-01110

SECTION V - HEALTH HAZARD DATA

-PERMISSIBLE EXPOSURE LEVEL:

NONE ESTABLISHED

-EFFECTS OF OVEREXPOSURE:

UNDILUTED MATERIAL CAN IRRITATE EYES AND SKIN IF CONTACTED DIRECTLY.

-FIRST AID:

EYES: FLUSH IMMEDIATELY WITH WATER FOR 15 MINUTES.

SKIN: WASH WITH SOAP AND WATER.

INGESTION: GIVE CITRUS JUICE OR LARGE QUANTITIES OF WATER.

INDUCE VOMITING AND CALL PHYSICIAN IMMEDIATELY.

SECTION VI - REACTIVITY DATA

STABILITY: [ ] Unstable [x] Stable

HAZARDOUS POLYMERIZATION: [ ] May occur [x] Will not occur

-INCOMPATIBILITY

ACIDS

-CONDITIONS TO AVOID:

ACIDS

-HAZARDOUS DECOMPOSITION PRODUCTS:

NONE

SECTION VII - SPILL OR LEAK PROCEDURES

-STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

CONTAIN SPILL AND PICK UP WITH ABSORBENT.

-WASTE DISPOSAL METHOD:

DISPOSE OF UNCONTAMINATED FLUID TO SANITARY SEWER SYSTEM OR CHEMICAL LANDFILL.

SECTION VIII - SPECIAL PROTECTION INFORMATION:

-RESPIRATORY PROTECTION:

NONE

-VENTILATION:

NONE

-PROTECTIVE GLOVES:

NONE IF HANDS ARE WASHED AFTER USE.

-EYE PROTECTION:

SAFETY GLASSES.

-OTHER PROTECTIVE EQUIPMENT:

NONE

SECTION IX - SPECIAL PRECAUTIONS

-PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

NONE

## =====

## SECTION IX - SPECIAL PRECAUTIONS (cont.)

## -----

## -OTHER PRECAUTIONS:

NONE

## =====

## SECTION X - ADDITIONAL REGULATORY INFORMATION

## -----

## -SARA TITLE III SECTION 313:

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and of 40 CFR 372:

CAS#	Chemical Name	Percent by Weight
-----	-----	-----
	None	

## -----

## -PROP 65 (CARCINOGEN):

WARNING: This product contains a chemical known to the state of California to cause cancer.

CAS#	Chemical Name
-----	-----
	None

## -----

## -PROP 65 (TETRATOGENIC):

WARNING: This product contains a chemical known to the state of California to cause birth defects or other reproductive harm.

CAS#	Chemical Name
-----	-----
	None

## -----

## -PROP 65 (BOTH CARCINOGEN AND TETRATOGENIC):

WARNING: This product may contain a chemical known to the state of California to cause cancer or birth defects or other reproductive harm.

CAS#	Chemical Name
-----	-----
	None

(cont.)

=====

SECTION X - ADDITIONAL REGULATORY INFORMATION (cont.)

-----

-PROP 65 (BOTH CARCINOGEN AND TERATOGENIC): (cont.)

# **STEWART / HALL** CHEMICAL CORPORATION

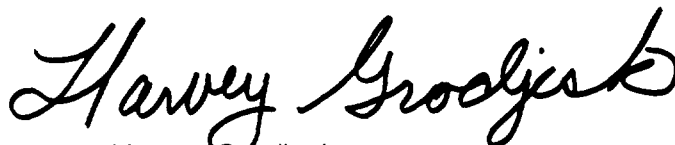
222 WASHINGTON STREET • MOUNT VERNON, NEW YORK 10553  
914-668-6300 FAX: 914-668-7862

Dear Customer:

Enclosed you will find Material Safety Data Sheets (MSDS's) for the products you recently ordered. These MSDS's are sent in compliance with OSHA's Hazard Communications Standard and SARA Title III. Under Stewart-Hall's automated order entry system, a copy of an MSDS will be sent when you order a chemical product for the first time. Also you will receive new copies with your next shipment of the same product whenever MSDS's have been updated.

Sincerely,

STEWART-HALL CHEMICAL CORP.



Harvey Grodjesk  
Vice President,  
Manufacturing & Technology

HG:sm  
encl.

**EVERFORM**  
**Synthetic Lubricating Compound**  
**For Metal Stamping and Forming**

**DESCRIPTION:**

Everform is a synthetic metalworking fluid used for various types of metal forming, such as roll forming, ferrous and non-ferrous metals, thread rolling and drawing.

**ADVANTAGES:**

Environmentally safe, uncontaminated fluid can be flushed to any regular sewage disposal system.

No Nitrites - Phenols

Exceptional corrosion protection

Residue easily removed with water

Waste treatability

Biologically resistant

**PHYSICAL PROPERTIES:**

Appearance: Translucent to orange  
Yellow to orange at 5% dilution

pH: 9.3

Flash point: None

Freezing point: 32 degrees F.

Weight per gallon: 8.66 lbs.

Odor: Slightly sweet

**DIRECTIONS:**

Before filling sump with **EVERFORM**, skim off tramp oil and drain. Circulate **CLEANMASTER** solution for 10 minutes and immediately rinse out twice with clean water to remove all foreign material. To avoid corrosion of the sump and prolong coolant life, rinse water should not be left in the system for more than 30 minutes. The sump must be filled with **EVERFORM** solution. Be certain to cover the entire machining area with **EVERFORM** after rinsing.

**PRODUCT APPLICATION:**

**EVERFORM** is recommended for use between neat and 5% concentrations, depending on the type of metal and the severity of the operation.

For Customer: TRW142 TRW FASTENERS DIVISION

Revised : 07/01/92

## SECTION I - PRODUCT IDENTIFICATION

Manufacturer: STEWART HALL CHEMICAL CORP.  
222 WASHINGTON STREET  
MOUNT VERNON NY 10553

Information Phone: 9146686300  
Emergency Phone: 800-424-9300  
CHEMTREC Phone: 800-424-9300

Product Class: SURFACTANT/CORROSION INHIBITOR!  
Trade Name : EVERKUT C  
Product Code : E09150K  
C.A.S. Number: MIXTURE  
Customer's No:  
Prepared By : HARVEY GRODJESK  
Title : TECHNICAL DIRECTOR  
D.O.F. Hazard Class : NOT HAZARDOUS  
Proper Shipping Name: COMPOUND, CLEANING  
Technical Name:

Hazard Ratings: Health - 1  
none -> extreme Fire - 0  
0 ---> 4 Reactivity - 1  
Personal Protection - B

UN #:

## SECTION II - HAZARDOUS INGREDIENTS

Ingredients	CAS #	Weight %	Exposure Limits	VP
			ACGIH/TLV	OSHA/PEL
AMINE	111-42-2	9.35	3 ppm	PPM N.E.
		STEL = NA	N.E.	NA N.E.
GLYCOL ETHER	20324-33-8	2.55	N.E.	PPM N.E.
		STEL = NA	N.E.	NA N.E.
PHOSPHATE ESTER	7664-38-2	3.75	1 mg/M3	1 mg/M3
		STEL = 3	mg/M3	3 mg/M3
TRIETHANOLAMINE	102-71-6	3.18		

\*\*\* ALL Ingredients in this product are listed in the T.S.C.A. Inventory.

N.E. = Not Established

## SECTION III - PHYSICAL DATA

Boiling Range: 212  
Evap. Rate: Faster than n-Butyl Acetate  
Volatiles vol % 75 Wgt% 77.9  
Vapor Density: Heavier than Air.  
Liquid Density: Heavier than Water.  
Wgt per gallon: 8.61 Pounds.  
Spec. Gravity: 1.03361

Appearance: RED CLEAR LIQUID. ODOR SLIGHT.  
V.O.C.: 20

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flammability Class: NA Flash Point: NONE F TCC LEL: UEL: 0.00%  
-EXTINGUISHING MEDIA:  
NA

0908-2484

TRW-01116



## =====

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA (cont.)

-----  
-SPECIAL FIREFIGHTING PROCEDURES:

NA

## -UNUSUAL FIRE &amp; EXPLOSION HAZARDS:

NA

## =====

## SECTION V - HEALTH HAZARD DATA

-----  
-PERMISSIBLE EXPOSURE LEVEL:

NONE ESTABLISHED

## -EFFECTS OF OVEREXPOSURE:

EYE IRRITANT AS CONCENTRATE. AT 10 TO 1 DILUTION RATE, PRODUCT  
WAS FOUND TO BE NON-IRRITATING. (TEST REPORTS AVAILABLE UPON  
REQUEST).

## -FIRST AID:

EYES: FLUSH EYES WITH WATER FOR 15 MINUTES. IF IRRITATION  
PERSISTS, CALL PHYSICIAN.INGESTION: IF INGESTED, GIVE WATER, MILK OR DILUTE VINEGAR.  
INDUCE VOMITING AND CALL PHYSICIAN IMMEDIATELY.

## =====

## SECTION VI - REACTIVITY DATA

-----  
STABILITY: [ ] Unstable [x] Stable

HAZARDOUS POLYMERIZATION: [ ] May occur [x] Will not occur

## -INCOMPATIBILITY

ACIDS

## -CONDITIONS TO AVOID:

NONE

## -HAZARDOUS DECOMPOSITION PRODUCTS:

NONE

## =====

## SECTION VII - SPILL OR LEAK PROCEDURES

-----  
-STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

FLUSH WITH WATER TO OPEN SEWER SYSTEMS.

## -WASTE DISPOSAL METHOD:

STANDARD SEWAGE DISPOSAL SYSTEM.

## =====

## SECTION VIII - SPECIAL PROTECTION INFORMATION:

-----  
-RESPIRATORY PROTECTION:

NONE

## -VENTILATION:

NONE

## -PROTECTIVE GLOVES:

RUBBER GLOVES WITH CONCENTRATE.

## -EYE PROTECTION:

GOGGLES WITH CONCENTRATE.

TRW-01117

0908-2485

STEWART HALL CHEMICAL CORP.  
Material Safety Data Sheet for: EVERKUT C(E09150K)

## =====

## SECTION VIII - SPECIAL PROTECTION INFORMATION: (cont.)

## -----

## -OTHER PROTECTIVE EQUIPMENT:

NONE

## =====

## SECTION IX - SPECIAL PRECAUTIONS

## -----

## -PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

KEEP FROM FREEZING.

## -OTHER PRECAUTIONS:

NONE

## =====

## SECTION X - ADDITIONAL REGULATORY INFORMATION

## -----

## -SARA TITLE III SECTION 313:

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right To Know Act of 1986 and of 40 CFR 372:

CAS#	Chemical Name	Percent by Weight
111-42-2	AMINE	9.35
7664-38-2	PHOSPHATE ESTER	3.75

## -----

## -PROP 65 (CARCINOGEN):

WARNING: This product contains a chemical known to the state of California to cause cancer.

CAS#	Chemical Name
------	---------------

-----  
None

## -----

## -PROP 65 (TETRATOGENIC):

WARNING: This product contains a chemical known to the state of California to cause birth defects or other reproductive harm.

CAS#	Chemical Name
------	---------------

-----  
None

=====

SECTION X - ADDITIONAL REGULATORY INFORMATION (cont.)

-----

-PROP 65 (BOTH CARCINOGEN AND TETRATOGENIC):

WARNING: This product may contain a chemical known to the state of California to cause cancer or birth defects or other reproductive harm

CAS#

Chemical Name

None

# **STEWART / HALL** CHEMICAL CORPORATION

222 WASHINGTON STREET • MOUNT VERNON, NEW YORK 10553  
914-668-6300 FAX: 914-668-7862

*For file*

Dear Customer:

Enclosed you will find Material Safety Data Sheets (MSDS's) for the products you recently ordered. These MSDS's are sent in compliance with OSHA's Hazard Communications Standard and SARA Title III. Under Stewart-Hall's automated order entry system, a copy of an MSDS will be sent when you order a chemical product for the first time. Also you will receive new copies with your next shipment of the same product whenever MSDS's have been updated.

Sincerely,

STEWART-HALL CHEMICAL CORP.

*Harvey Grodjick*

Harvey Grodjick  
Vice President,  
Manufacturing & Technology

HG:sm  
encl.

0908-2488

RECEIVED  
AUG 15 1988

# MATERIAL SAFETY DATA SHEET

222 WASHINGTON STREET      **STEWART/HALL**      MT. VERNON, N.Y. 10553  
CHEMICAL CORPORATION

SECTION I	
Manufacturers Name Stewart-Hall Chemical Corp	Emergency Telephone (914) 668-6300
Address 222 Washington Street, Mount Vernon, NY 10553	
Chemical Name and Synonyms Synthetic Metalcutting Fluid	
Trade Name and Synonyms Everkut-Extra	
Chemical Family Organic	Formula Proprietary

SECTION II - INGREDIENTS			
	C.A.S. NO.	W/V	%
Sodium Tolytriazole	64665-57-2		<2.0%
Contains no other "Hazardous Materials"			

SECTION III - PHYSICAL DATA		
Boiling Point (°F.) 212°F	Specific Gravity (H <sub>2</sub> O=1)	1.08
Vapor Pressure (mm Hg.) --	Percent Volatile By volume (1%)	~70
Vapor Density (Air=1) --	Evaporation Rate (water =1)	1
Solubility in Water 100%		
Appearance and Odor Yellow - clear - no odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA			
Flash Point (Method Used)	None	Flammable Limits	LeI      UeI
Extinguishing Media	None		
Special Fire Fighting Procedures	None		
Unusual Fire and Explosion Hazards			
None			

SECTION V - HEALTH HAZARD DATA	
Threshold Limit Value	
Effects of Overexposure Undiluted material can irritate eyes and skin if contacted directly.	
Emergency and First Aid Procedures Eyes - flush immediately for 15 minutes with water. Skin - wash with soap and water. Ingestion - Give citrus juice or large quantities of water. Induce vomiting and call physicians immediately.	

SECTION VI - REACTIVITY DATA		
Stability	Unstable	Conditions to Avoid
	Stable X	
Incompatibility (Materials to avoid) Acids		
Hazardous Decomposition Products None		
Hazardous Polymerization	May Occur	Conditions to Avoid
	Will Not Occur X	

SECTION VII - SPILL OR LEAK PROCEDURES	
Steps to be taken in case material is released or spilled	Contain spill and pick up with absorbent.
Waste Disposal Method	Dispose of uncontaminated fluid to sanitary sewer system or chemical landfill.

SECTION VIII - SPECIAL PROTECTION INFORMATION		
Respiratory Protection (Specify Type) None		
Ventilation	Local Exhaust	Special
	Mechanical (General) None	Other
Protective Gloves	None if hands are washed after use.	Eye Protection safety glasses
Other Protective Equipment None		

SECTION IX - SPECIAL PRECAUTIONS	
Precautions To Be Taken In Handling and Storing	None
Other Precautions	None

*Harry Grodiesk*

*Experimental*  
030**MATERIAL SAFETY DATA SHEET****Stewart-Hall Chemical Corp.**

222 Washington St., Mt. Vernon, NY 10553

Date Prepared: 9/19/89

**Section I**MANUFACTURER'S NAME: Stewart-Hall Chemical Corp.ADDRESS: 222 Washington St., Mt. Vernon, NY 10553EMERGENCY PHONE #: - 914-668-6300CHEMICAL NAME & SYNONYMS: ProprietaryTRADE NAME & SYNONYMS: **EVERSTAMP - E.P.**CHEMICAL FAMILY: Organic Phosphate Ester**Section II HAZARDOUS INGREDIENTS**

	<u>C.A.S.#</u>	<u>1</u>	<u>ACGIH/TLV</u>	<u>OSHA/PEL</u>	<u>OTHER</u>
Phosphoric acid	7664-38-2	1.0	1 MG/M3	1 MG/M3	NL

Contains no other substances found on the "Hazardous Substance" List.

**Section III- PHYSICAL DATA**

<u>BOILING POINT:</u> (0 degrees F)	-	Greater than 200
<u>SPECIFIC GRAVITY:</u> (Water=1)	-	1.20
<u>PERCENT VOLATILE BY VOLUME:</u>	-	1.5%
<u>VAPOR PRESSURE:</u> (mm Hg.)	-	Not Volatile
<u>VAPOR DENSITY:</u> (Air=1)	-	Not Volatile
<u>EVAPORATION RATE:</u>	-	Not Volatile
<u>SOLUBILITY IN WATER:</u>	-	Soluble
<u>APPEARANCE AND ODOR:</u>	-	Clear Viscous Liquid/Mild Aromatic

**SECTION IV - FIRE AND EXPLOSION HAZARD DATA**

FLASH POINT (Deg. F): Greater than 200 (Pensky Martens CC)  
FLAMMABLE LIMITS: NA  
EXTINGUISHING MEDIA: CO2, Dry Chemical, BC/ABC Extinguisher  
SPECIAL FIRE FIGHTING PROCEDURES: None  
UNUSUAL FIRE & EXPLOSION HAZARDS: None

MSDS - EVERSTAMP - E.P.

Page 2

SECTION V - HEALTH HAZARD DATA

Permissible Exposure Level - See Section II for hazardous ingredients present in this product and their corresponding TLV's.

Effects of Overexposure:

Eyes - Contact can cause severe irritation, redness, blurred vision, severe or permanent damage.

Skin - Prolonged contact can cause severe irritation.

Ingestion - Can cause severe irritation to mucous membranes.

First Aid Procedures:

Eye Contact - Immediately flush with copious amounts of water for at least 15 minutes. Consult physician.

Skin Contact - Immediately flush with copious amounts of soap and water for at least 15 minutes. If irritation persists, contact physician. Launder contaminated clothing before re-use.

Ingestion - Contact a physician immediately.

Inhalation - Remove to fresh air. If necessary, give oxygen, artificial respiration. Contact physician.

SECTION VI - REACTIVITY DATA

Chemical Stability - Stable

Conditions to Avoid - None Known

Incompatible Materials - Strong Oxidizing Agents

Hazardous Decomposition Products - None Known

Hazardous Polymerization - Will Not Occur.

SECTION VII - SPILL OR LEAK PROCEDURE

For Large Spills - Soak up with sand or sweeping compound and dispose of as solid waste.

For Small Spills - Flush to industrial sewer.

Waste Disposal - In accordance with local, state and federal regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Respiratory Protection - Not Required

Eye Protection - Chemical goggles

Protective Gloves - Impervious

Ventilation - Not required

Other Protective Equipment - Wear protective clothing to prevent skin contact.



MSDS - EVERSTAMP - E.P.

Page 3

## =====

## SECTION IX - SPECIAL PRECAUTIONS

-----

Precautions to be Taken in Handling and Storing - Keep container closed when not in use.

Other Precautions - Spilled material is quite slippery.

## =====

## SECTION X - TRANSPORTATION REGULATORY INFORMATION

-----

DOT Proper Shipping Name - Liquid Soap

DOT Classification - Corrosive

UN/NA number - UN 1760

Label - Corrosive

## =====

## SECTION XI - OTHER REGULATORY CONTROLS

-----

TSCA - Listed in the TSCA Inventory

SARA Title III - Phosphoric acid

CTFA Designation - Proprietary

California Prop. 65 - None Detectable

:

:

0908-2493

U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

Form Approved  
OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

## SECTION I

MANUFACTURER'S NAME <b>THE NEATSFOOT OIL REFINERIES CORPORATION</b>		EMERGENCY TELEPHONE NO. <b>(215) 739-1291</b>
ADDRESS (Number, Street, City, State, and ZIP Code) <b>EAST ONTARIO &amp; BATH STREETS, PHILADELPHIA, PA. 19134</b>		
CHEMICAL NAME AND SYNONYMS <b>EXTRA WINTER STRAINED LARD OIL</b>		TRADE NAME AND SYNONYMS <b>EWSLO</b>
CHEMICAL FAMILY <b>FATTY OILS TRIGLYCERIDES</b>	FORMULA <b>801-628-2</b>	

## SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS		NONE	BASE METAL		NONE
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H <sub>2</sub> O=1)	0.910	-0.920
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)		
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____=1)		
SOLUBILITY IN WATER	NIL			
APPEARANCE AND ODOR	AMBER OIL LIQUID, FATTY ODOR			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	OC 650 °F	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA	CO <sub>2</sub> OR FOAM			
SPECIAL FIRE FIGHTING PROCEDURES TREAT AS GREASE OR OIL FIRE				
UNUSUAL FIRE AND EXPLOSION HAZARDS				

TRW-01126

SECTION V - HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE	
EFFECTS OF OVEREXPOSURE SAME AS EXPOSURE TO ANY ANIMAL, OIL OR GREASE	
EMERGENCY AND FIRST AID PROCEDURES	
WASH THOROUGHLY WITH SOAP AND WATER	

SECTION VI - REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid) WATER			
HAZARDOUS DECOMPOSITION PRODUCTS			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASH DOWN AREA WITH SOAPY WATER.	
WASTE DISPOSAL METHOD	
EMULSIFY WITH SOAP OR DETERGENT	

SECTION VIII - SPECIAL PROTECTION INFORMATION		
RESPIRATORY PROTECTION (Specify type) CONVENTIONAL FACE MASK		
VENTILATION	LOCAL EXHAUST X	SPECIAL
	MECHANICAL (General)	OTHER
PROTECTIVE GLOVES CLOTH OR RUBBER	EYE PROTECTION CONVENTIONAL GOGGLES	
OTHER PROTECTIVE EQUIPMENT		

SECTION IX - SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	
AVOID EXCESSIVE HEATING OR COOLING.	
OTHER PRECAUTIONS	



# MATERIAL SAFETY DATA SHEET

PRODUCT IDENTITY  
(AS ON LABEL):

EXTREME PRESSURE LUBE #3  
(CAS #647-42-650)

## SECTION I

MANUFACTURER'S NAME: CHICAGO MANUFACTURING & DISTRIBUTING DIVISION  
EVANS PRODUCTS COMPANY  
ADDRESS: 6581 MILL STREET  
GAGETOWN, MICHIGAN 48735  
EMERGENCY PHONE: (517) 665-9913 INFORMATION PHONE: (517) 665-9913  
DATE PREPARED: NOVEMBER, 1985 REVISED: MAY 1986

## SECTION II - HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

HAZARDOUS COMPONENTS	OSHA PEL	TLV	ACGIH STEL	OTHER LIMITS RECOMMENDED	
PETROLEUM HYDROCARBON: (CAS #64741-95-3)	5 mg/m <sup>3</sup> (mist)	5 mg/m <sup>3</sup> (mist)	10 mg/m <sup>3</sup> (mist)	- - -	59.0
PETROLEUM WAX: (CAS #63231-60-70)	not determined	2 mg/m <sup>3</sup> (fume)	6 mg/m <sup>3</sup> (fume)	Note #1	14.0
RESIN ESTER: (CAS #65997-13-9)	not determined	not determined	not determined	Note #2	5.0
POLYOXYETHYLENE DINONYLPHENYL ETHER PHOSPHATE (CAS #00039464-64-7)	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	- - -	22.0
FRAGRANCE COMPOUND: (CAS #not determined)	not determined	not determined	not determined	Note #3	0.02

NOTE 1: Deletion of the STEL for petroleum (paraffin) wax fume has been proposed as an intended change for 1985-86.

NOTE 2: THE MANUFACTURER OF THIS COMPONENT HAS STATED THAT THE DUST SHOULD NOT BE CONSIDERED A HAZARD. THE MATERIAL SAFETY DATA SHEET FOR THE PRODUCT INDICATES, HOWEVER, THAT THE DUST OF THE PRODUCT SHOULD BE TREATED AS A NUISANCE PARTICULATE WITH A TLV OF 10 mg/m<sup>3</sup>. The following statements also appear in the manufacturer's Material Safety Data Sheet, "Flammable dust when finely divided and suspended in air. Keep away from sparks and open flame, use with adequate ventilation."

NOTE 3: THE MANUFACTURER OF THIS COMPONENT, HAS STATED, "This material is a mixture of fragrance chemicals, essential oils, and natural extracts. The exact components of which are considered to be a trade secret. The Hazard Communication Standard requires that such mixtures be assumed to present the same health hazards as do components that constitute at least 1% of the mixture (.1% for carcinogens) although OSHA has noted that the hazards of individual components may be altered by including them in a mixture."

(continued)

## SECTION II - HAZARDOUS INGREDIENTS / IDENTITY INFORMATION (continued)

In general, flavor and fragrance materials are safe for their intended use, however, exposure to concentrations of these materials at greater than the intended use level may cause irritation of the eyes, throat and lungs, contact dermatitis, and a few may be toxic through oral and dermal routes.

This M.S.D.S. does not reflect safety in the final product."

## SECTION III - PHYSICAL / CHEMICAL PROPERTIES

BOILING POINT: 246°F. @ 1 mm/Hg. (INITIAL BOILING POINT)

VAPOR PRESSURE: 0.3 mm/Hg. @ 200°F.

VAPOR DENSITY (AIR-1.0): GREATER THAN 20

SPECIFIC GRAVITY (H<sub>2</sub>O-1.0): 0.9510 @ 60/60°F.

MELTING POINT (POUR POINT): 130°F.

EVAPORATION RATE (BUTYL ACETATE-1.0): Essentially non-volatile at room temp.

SOLUBILITY IN WATER: Nil. (The product, while essentially insoluble in water, forms a stable emulsion of 1.15% oil phase in water when mixed with a ten-fold excess of water.)

APPEARANCE & ODOR: Grease-like semi-solid which is darker in color than 8.0 on the ASTM D1500 scale.  
Slight, pleasant odor.

## SECTION IV - FIRE & EXPLOSION HAZARD DATA

FLASH POINT COC: 445°F.

FLAMMABLE LIMITS: % (V/V): LEL - APPROX. 0.9 (Exact value not available)  
UEL - APPROX. 7.0 (Exact value not available)

### EXTINGUISHING METHODS:

Foam, water spray (fog), dry chemical, carbon dioxide and vaporizing liquid type extinguishing agents may all be suitable for extinguishing fires. Water spray may be used to flush spills away from exposures. Dense smoke may be generated when burning. Respiratory protection may be required for fire fighting personnel. Self-contained breathing apparatus may be required in enclosed areas or when large quantities of liquid are burning. Minimize breathing gases, vapors, fumes or decomposition products.

(continued)

#### SECTION IV - FIRE & EXPLOSION HAZARD DATA (continued)

##### UNUSUAL FIRE & EXPLOSION HAZARDS:

Hazardous products of combustion of the product include dense smoke and fumes, carbon monoxide, carbon dioxide, aldehydes, nitrogen oxides, phosphine and/or other decomposition products of organic phosphorus compounds. The product reacts vigorously with strong oxidizing agents.

##### EMPTY CONTAINER WARNING:

Empty containers contain residue (liquid & vapor). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat, flame, sparks or other sources of ignition. Do not attempt to clean. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All such containers should be disposed of in an environmentally safe manner and in accordance with all relevant governmental regulations.

#### SECTION V - REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizing agents

##### HAZARDOUS DECOMPOSITION OR BY-PRODUCTS:

The product will react with oxidizing agents, especially when heated. Thermal and oxidative decomposition products produced when compound is heated in air, include oxides of phosphorus, carbon and nitrogen, aldehydes, phosphine and other toxic oxides and fumes.

HAZARDOUS POLYMERIZATION WILL NOT OCCUR.

#### SECTION VI - HEALTH HAZARD DATA

ROUTES OF ENTRY: Inhalation of mist, spray or vapor - skin contact  
- ingestion - injection by high pressure grease gun

##### VARIABILITY:

Health studies have shown that many petroleum hydrocarbons and synthetic lubricant blends pose potential human health risks which may differ from one individual to another. For this reason exposure to such materials in the form of vapors, mists or fumes should be minimized.

##### SIGNS AND SYMPTOMS OF EXPOSURE:

- |              |  |
|--------------|--|
| EYE CONTACT  | - May cause burning or irritation  |
| SKIN CONTACT | - May result in irritation or dermatitis on prolonged or repeated exposure |
| INHALATION   | - In a mist form may cause local irritation                                |
| INGESTION    | - May cause local irritation of the mucous membranes                       |

CARCINOGENICITY - None

(continued)

## SECTION VI - HEALTH HAZARD DATA (continued)

### EMERGENCY AND FIRST AID PROCEDURES:

- |              |   |
|--------------|---|
| EYE CONTACT  | - If product gets in eyes, flush eyes with clear water for at least 15 minutes or longer until irritation subsides. Call a physician. |
| SKIN CONTACT | - Remove all contaminated clothing, wash skin with soap and water. Contaminated clothing must be washed before being reworn.          |
| INHALATION   | - In case of inhalation of vapors, spray or mist, remove exposed person to fresh air immediately.                                     |
| INGESTION    | - If product has been swallowed, do not induce vomiting. Call physician immediately.  |
| INJECTION    | - If injected beneath the skin, regardless of amount injected, call a physician immediately.  |

## SECTION VII - PRECAUTIONS FOR SAFE HANDLING & USE

### STEPS TO BE TAKEN IN CASE PRODUCT IS RELEASED OR SPILLED:

Collect spills with shovel, dry sand or oil absorbant materials. Clean spill area with aqueous detergent solutions.

### WASTE DISPOSAL METHODS:

Waste material should be dumped or buried in an approved industrial waste land fill. Large quantities may be disposed of by incineration in a suitable combustion chamber. Used product may be suitable for reclamation or re-refining if not contaminated. Disposal must comply with all governmental regulations.

### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Store in sealed containers away from heat, open flame and oxidizing materials.

### OTHER PRECAUTIONS:

Do not transfer to unmarked containers.

## SECTION VIII - CONTROL MEASURES

### RESPIRATORY PROTECTION:

Normally not needed at ambient temperatures and under normal conditions of product use.

### VENTILATION:

Use local exhaust to capture vapor, mists, spray and/or fumes if necessary.

### PROTECTIVE GLOVES:

Use chemical resistant synthetic rubber protective gloves, if needed to avoid prolonged or repeated skin contact.

### EYE PROTECTION:

Use splash goggles or face shield.

(continued)

## SECTION VIII - CONTROL MEASURES (continued)

### OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

Use chemical resistant apron or other impervious clothing if required to prevent contamination of regular clothing which could result in prolonged or repeated skin contact.

### WORK PRACTICES:

Keep containers closed when not in use. Do not handle or store near heat, sparks, flame or oxidizing agents. When using product with a high pressure grease gun, avoid injection of the product beneath skin or into any other part of the body.

### HYGIENE PRACTICES:

Cleanse skin thoroughly after contact. Product may be removed by use of waterless hand cleaners followed by thorough washing with soap and water.

TRW-01132